


CHILD CARE THROUGH THE CENTURIES



Editors:
John Cule - Terry Turner



Digitized by the Internet Archive
in 2023

R.J. SCHMIDT,
August 1986

CHILD CARE THROUGH THE CENTURIES

An historical survey
from papers given at

The Tenth British Congress on the History of Medicine
Y Degfed Gynghres Brydeinig ar Hanes Meddygaeth

at

Clyne Castle, Swansea
Castell Clyne, Abertawe
6-8th April 1984

and other invited contributions

Edited by

JOHN CULE & TERRY TURNER

Cardiff:
STS Publishing
for
The British Society for the History of Medicine

10th Congress Committee

President, H.M.S.W.	Dr Emyr Wyn Jones
Joint Organising Secretaries	Dr John Cule Mr Terry Turner
Treasurer	Dr John Guy
Congress Warden	Dr Peter Thomas
Exhibition Organiser	Dr Marshall Annear †
Executive Secretary and Coordinator	Mrs Myfanwy Scott

Copyright © 1986
The British Society for the History of Medicine

ISBN 0 948917 00 8

British Library Cataloguing in Publication Data

British Congress on the History of Medicine.
(10th : 1984 : Swansea)
Child care through the centuries : an historical
survey from papers given at the Tenth British
Congress on the History of Medicine, Y Degfed
Gyngres Brydeinig ar Hanes Meddygaeth, at Clyne
Castle, Swansea, Castell Clyne, Abertawe, 6-8th
April 1984, and other invited contributions.
1. Child health services—History
I. Title II. Cule, John III. Turner, Terry
IV. British Society for the History of Medicine
362.1'9892'0009 RJ101

ISBN 0-948917-00-8

STS Publishing
The Welsh School of Pharmacy
U.W.I.S.T., Cardiff, Wales, G.B.
for
The British Society for the History of Medicine

Printed in Great Britain
by the Reprographic Unit, U.W.I.S.T., Cardiff.

PREFACE

The Tenth British Congress on the History of Medicine was hosted at Clyne Castle, University College of Swansea for the British Society of the History of Medicine by the History of Medicine Society of Wales. It took place some eleven years after the Ninth Congress, which was also organised by the Welsh Society at Swansea and Cardiff. Further congresses have since been arranged to take place at Edinburgh in 1986 by the Scottish Society of the History of Medicine and at Bath in 1987 by the Bath Medical History Group.

At the Tenth Congress members were welcomed by Professor Ralph Griffiths who gave an historical account of Clyne Castle. In support of the medical historical papers the late Dr Marshall Annear mounted an exhibition on historical aspects of paediatrics, supported by a collection of pap boats and feeding bottles generously loaned by Dr Richard West.

The Societies are grateful to the University of Wales, University College of Swansea, and The Mayor and Corporation of the City of Swansea for their hospitality during the Congress and also to Glaxo, I.C.I., Reckitt & Colman, and Syntex for their support.

This collection of essays includes the papers read at the meeting as well as invited contributions on the Congress theme.

We should like to join the editors in thanking Mrs Myfanwy Scott and Dr Richard J. Schmidt for their patient and skilful technical help without which the publication of these proceedings would not have been possible. We should similarly like to acknowledge the assistance of Mr Fathy Halaweish who produced the Arabic lettering in the paper by G.A. Russell.

Sir Gordon Wolstenholme

President British Society for the History of Medicine.

Dr Emyr Wyn Jones

President History of Medicine Society of Wales.

TABLE OF CONTENTS AND CONTRIBUTORS

page

THE CHILD IN HOSPITAL AND THE RE-EMERGENCE OF THE FAMILY

1

Jean Cleary

Senior Research Officer

Institute of Health Care Health Studies

University College Swansea

Swansea

THE HEALTH OF THE SCHOOL CHILD

18

John D Hatch

Department of Anatomy

The Medical School

The University of Birmingham

Birmingham

PAEDIATRIC SURGERY

28

John D Atwell

Consultant Paediatric Surgeon

The Wessex Regional Centre for Paediatric Surgery

The General Hospital

Southampton

WHITLOCK NICHOLL [1786-1838] AND PAEDIATRICS

48

Peter H Thomas

Lower Farm House

Llysworney

Cowbridge

South Glamorgan

[Fellow of the Faculty of the History and Philosophy of
Medicine and Pharmacy (Worshipful Society of Apothecaries)]

Honorary Curator of the Museum of the Royal College of
General Practitioners

Past-president of The History of Medicine Society of Wales]

THE EARLY HISTORY OF PSYCHIATRIC CARE OF CHILDREN 61

Sydney Brandon
Professor of Psychiatry
University of Leicester
Leicester Royal Infirmary
Leicester

THE EVOLUTION OF DEVELOPMENTAL MEDICINE 80

Sheila J Wallace
Consultant Paediatric Neurologist
University of Wales College of Medicine
Cardiff

THE HISTORY OF CHILD ABUSE 109

Bernard Knight
Professor of Forensic Pathology
University of Wales College of Medicine
Cardiff

'THE ENGLISH DISEASE': INFANTILE RICKETS AND SCURVY IN
PRE-INDUSTRIAL ENGLAND 121

Valerie A Fildes
Holt View
Lye Hill
Breachwood Green
Hitchin
Herts

NEONATAL TETANUS: A MAJOR DISEASE OF THE SCOTTISH
ISLANDS 136

Richard A Collacott
Lecturer in Psychiatry
University of Leicester
Leicester Royal Infirmary
Leicester
[History of Medicine Research Fellow, Royal College of
General Practitioners, 1980-1983]

TOWARDS A RATIONAL INFANT-FEEDING 153
The Science of Nutrition and Paediatrics in the
Netherlands 1840-1914

Annemarie de Knecht-van Eekelen
Instituut voor Geschiedenis der Geneeskunde
Faculteit der Geneeskunde Katholieke Universiteit Nijmegen
Postbox 9101
6500 HB Nijmegen
The Netherlands

THE ROLE OF IBN TUFAYL, A MOORISH PHYSICIAN, IN THE
DISCOVERY OF CHILDHOOD IN SEVENTEENTH CENTURY ENGLAND 166

G A Russell
The Wellcome Institute for the History of Medicine
London

CHILD CARE THROUGH THE CENTURIES 179

A M C Ribbink-Goslinga
Medical Editor/Translator
Secretary International Paediatric Surgical History Club
Sophia Children's Hospital
Department of Paediatric Surgery
Gordelweg 160
3038 GE Rotterdam
The Netherlands

JOHN JONES PHISITION on THE PRESERVATION OF BODIE AND
SOUL 195

John Cule
Abereinion
Capel Dewi
Llandysul
Dyfed

Haskell D Isaacs
Research Associate
Cambridge University Library
West Road
Cambridge

The majority of these papers were presented by their authors at the Tenth British Congress on the History of Medicine held at the University College of Swansea between 6th and 8th April 1984. Others are invited contributions on the Congress theme.

THE CHILD IN HOSPITAL AND THE RE-EMERGENCE OF THE FAMILY

Jean Cleary

The history of children's hospitals has been well documented, not least in work addressed to this society,¹ well documented perhaps because their foundation is relatively recent. Less is known about the admission of children to earlier general hospitals - a report of the Charity Commissioners in 1840 said of St Bartholomew's Hospital 'infancy is not a bar to admissions, and, if necessary, the mother of a child of tender years is received into the hospital to attend to it'. The same was said of St Thomas's.² Children were seldom admitted to hospital in the eighteenth century; in one London parish only sixteen percent of those who died in hospital were children, despite the prevailing high mortality rates: over forty percent of those buried as 'poor' were described as children.³

THE EIGHTEENTH CENTURY

There was little provision for sick children; George Armstrong had founded the 'Dispensary for the Infant Poor' in 1796, the first institution specifically for them in Britain, but it did not long survive his death. The idea of in-patient care was mooted to him but he dismissed the idea in these words:

'But a very little Reflection will clearly convince any thinking Person that such a scheme as this can never be executed. If you take away a sick Child from its Parent or Nurse you break its Heart immediately; and if there must be a Nurse to each Child what

kind of an Hospital must there be to contain any Number of them? Besides, as in this case the Wards must be crowded with grown Persons as well as Children must not the Air of the Hospital be thereby much contaminated? Would not the Mothers or the Nurses be perpetually at Variance with one another if there were such a Number of them together? Would not the Children almost constantly disturb each other with their Crying, Supposing only a few in one Ward should be taken ill of a Vomiting and Purging, to which Infants are so very subject, would not this presently infect the Air of the Ward and very probably communicate the Disorder to other children confined there? Yet this is one of the principal Diseases where an Hospital might be of Service to Infants, were it not for insuperable Objections just now mentioned. Add to all this it very seldom happens that a Mother can conveniently leave the Rest of her Family to go into an Hospital to attend her sick Infant.⁴

This passage anticipates most of the arguments that have since been raised on the subject, about separation, cross-infection and the effect of visitors in the ward.

THE NINETEENTH CENTURY

In 1816 a new dispensary was founded by John Bunnell Davis, 'The Universal Dispensary for Children', his main aim being to reduce childhood mortality by filling the gap between the care of babies by midwifery practitioners and the services provided by the general dispensaries and the general hospitals. Davis died in 1824 but the Dispensary survived and when Charles West became its Physician in 1842 he began to expand its activities again. Domiciliary visiting was reestablished and revealed the appalling housing conditions of the poor. Buildings which had been new in Davis's time were decaying, overcrowded and still lacking in sanitation⁵ – the handle of the Broad Street pump was not removed until 1854: infantile mortality remained high.

At this time such children as were admitted to hospital were generally put into the women's wards.⁷ Guy's had

experimented with a children's ward, between 1848 and 1854, but 'the cots were then distributed in the various women's wards . . . where the services of the women patients could be utilised in their nursing and care'.⁸ West began to appeal for funds for inpatient accommodation for the Dispensary in 1846, but he resigned from it three years later before anything transpired. Instead, he launched an appeal for funds to open a children's hospital in Great Ormond Street, successfully this time and it was opened in 1852,⁹ though as the The Lancet had pointed out 'long after similar institutions . . . in Paris, Berlin, Vienna, St Petersburg, Turin and even Constantinople'.¹⁰

Other children's hospitals soon opened in other parts of the country and by 1888 there were thirty eight. The greater understanding of the nature of infection, the part played by cleanliness in preventing its spread and the great improvement in nursing initiated by Florence Nightingale made hospitals physically safer for children - not that she was in favour of them. She considered that the enormous child mortality was caused by 'defective household hygiene. The remedies are just as well known, and among them is certainly not the establishment of a Child's Hospital'.¹¹ If hospital care was necessary for children the proper way was to place them among the women patients.¹²

Anaesthesia also meant improved chances for children, as well as adults, but in the absence of potent anti-infectives, professional nursing and scrupulous cleanliness were the main weapons against disease.

The parents of hospitalized children, mainly the inner city poor, were regarded as incompetent, if no worse. In the history of the Evelina, founded in 1869 by Ferdinand de Rothschild, the first mention of parents is a quotation from a local paper of 1887. 'One of the nurses told us the pity she felt the other day she met a child who had not long left her care, clinging to a drunken mother's skirts and following her zig-zag plunges from one side of the street to the other.' ¹³ It was probably thought to be doing a child a favour to remove it from such care.

In the general hospitals separate children's wards were being established. In Leeds in 1870 one was opened in the new Infirmary building 'as great practical inconveniences are found to arise from the present plan of distributing the children through the female wards'.¹⁴ Visiting by families

was not encouraged, though nursing mothers could still be admitted with their babies. The child's loneliness might be assuaged by the much deprecated, but often necessary, tactic of nursing two in one cot. Instructions were being issued about this in Leeds as late as 1900.¹⁵

Earlier this year correspondence appeared in the South Wales Evening Post about the old Swansea Isolation Hospital, built in a remote spot on the foreshore near the docks in 1885, after its predecessor, roughly where the Guildhall now stands had been burnt down by objectors.¹⁶ The writers speak of children being two or even three to a bed as late as the nineteen twenties. These children, whose stay might be reckoned in months, could not be visited at all unless they were critically ill, only glimpsed through the windows.¹⁷ When its successor was occupied in 1928, humane authority provided stone blocks outside the windows to ease the lot of the peering relatives.

The stereotype of mothers as incompetent and ill-informed about childcare persisted, at any rate among those who provided services for children were likely to be admitted to public hospitals. Post 1919 in particular there was an increase in welfare provision for mothers and children, giving what was considered to be good advice.

THE TWENTIETH CENTURY

A book published in 1927 called The London Child gives a picture of the services available there for the poor child, from the baby clinic to the approved school, the recipients being equally grateful for both, apparently. Parents in it were generally well-meaning, but otherwise more or less useless, defeated by their poverty and their conditions although the author agreed that children were no longer sewn up for the winter in their clothes. At the clinic, we are told, 'mothers still have to be reminded by a fearsome picture of a bowlegged infant that "Baby must not walk too soon" and by similar instructive diagrams that the fly is its deadliest enemy, that it must be fed by the clock and other important precepts'.¹⁸

The need for improved physical conditions, better diet and medical care, meant that few qualms were felt about removing babies, or toddlers from their families for weeks, months or even years, to hospitals which might be many miles from

home. Where, we are told 'little Londoners have such a good time that they are the objects of envy to their brothers and sisters'.

The disciplined hygienic routine of hospital life was thought to be positively beneficial, being more scientific in the manner propounded by J.B. Watson and Frederick Truby King than sloppy home care. Mothers, in particular, needed to be educated out of responding to their children, almost out of showing them any affection. Watson's ideas on child rearing of 1928, must have been very reassuring to the busy sister of a well polished ward:

'Never hug or kiss them. Never let them sit in your lap. If you must, kiss them once on the forehead when they say goodnight. Shake hands with them in the morning. Give them a pat on the head if they have made an extremely good job of a difficult task. Try it out. In a week's time you will find how easy it is to be perfectly objective with your child and at the same time kindly. You will be ashamed of the mawkish sentimental way you have been handling it.'

Truby King's passionate insistence on the virtues of doing everything by the clock and permitting no deviation from routine must have fitted easily into the life of the hospital.¹⁹

The 1939-45 War was to be the agent of change in this as in so many other matters. It provided a wealth of examples of the effects of separation, in Europe the homeless children whose plight prompted the WHO to call on John Bowlby;²⁰ at home the evacuees who puzzled their hosts by wetting their beds; as well as the children who had scarcely seen their soldier fathers and babies placed in nurseries while their mothers did war work.

In one such nursery, run by Dorothy Burlingham and Anna Freud, they observed the children's reactions to their parents when they did see them and the effect on their behaviour when they did not. They also observed that 'the institutional child in the first two years of life has advantages in all those spheres of his life which are independent of the emotional side of his nature . . . comparisons . . . serve to show that certain

achievements such as speech and habit training are closely related to the child's emotions even though this may not be apparent at first glance' and, of older children: 'if the grownups (in their lives) remain remote and impersonal or . . . change so often that no personal attachment is effected, institutional education will fail in this important respect' - the development of character and personality.²¹

Paediatricians too were beginning to question hospital practice. Sir James Spence wrote in a memorandum for the Nuffield Trust in 1942 'that some hospitals and other institutions in the past have done more harm than good to children is beyond dispute. There are two main dangers. The first is the physical harm and death which may come to infants and young children from hospital infections. The second is the psychological harm which may come both to young and older children who are emotionally and mentally starved from too long a stay in these places'.²² In particular he recommended 'the admission of mothers to undertake the nursing of the infants', which he had been doing in Newcastle upon Tyne since the mid-twenties.²³

In New Zealand, two plastic surgeons, Cecily and H.P. Pickerill,²⁴ had begun to admit mothers to nurse their children in 1927, from 1942 in a specially equipped hospital unit, with the express purpose of eliminating cross-infection and in 1954 they were able to report that in eleven years they had 'had no single case of cross-infection'. They were also sure that the mother's presence conveyed psychological benefits to the infant 'who looks to her with confidence for comfort and cheer . . . An infant without a mother is as a sailor without a compass'. They also said 'Mothers, we find, are not stupid, as is sometimes suggested'.²⁵

Psychologists were beginning to express disquiet about the quality of life in hospitals and other institutions, as lacking in intellectual stimulation and opportunity for play as well as in parenting, the effects of which could persist into adult life²⁶ and might appear in delinquent behaviour.²⁷

The concerns of paediatricians, psychologists, psychiatrists and psychoanalysts all pointed in the same direction, the need to improve the psycho-social environment of the child in hospital. The usual conditions of admission

were considered to cause distress, were generally disturbing in the short term and perhaps damaging in the long term. In Britain, too, the rising standard of living for the mass of the population meant that "hospital class" patients were no longer "a species apart" as MacKeith²⁸ put it, and the establishment of the NHS gave the public at large a greater interest in the way things were run. The development of antibiotics, also, meant a much greater control of infection and shortened hospital stays.

The same concerns were operating in the United States. The provision of play facilities was probably the first step: the Boston Floating Hospital began its play program in 1947. Research began too on the effects of common hospital experiences in the hope of finding ways of amelioration.²⁹ Tonsillectomy patients were frequently the subject of study, being the commonest surgical procedure, sheer numbers made them worthy of study, but they also could provide large samples with a small age range, undergoing essentially similar experiences and 'cold' surgery too, so that research could be prospective.

In Britain the most influential thinking on the subject emanated from the Tavistock Clinic, particularly the work of John Bowlby and James and Joyce Robertson. Robertson's film 'A Two-year old goes to Hospital'³⁰ in particular had tremendous impact, as did his classification of the small child's reactions to a hospital stay with restricted visiting, as phases of protest, despair and denial, rather than the euphemistic 'settling in'. Stress was laid on the 'primary need for a close and loving relationship to his mother or one other taking her place' while hospital provided a 'rota of custodians rather than one'. Robertson also drew attention to the disturbed behaviour that many children show on return home, effects which diminish over weeks or months.³¹

Debate still continued about the possible longer term effects of admission to hospital on the child. It seems likely that very early, prolonged or repeated conventional admissions would be associated with psychological damage lasting into maturity, particularly if some other factor rendered the child more vulnerable.^{32,33,34} The theoretical basis of this work lay in psychoanalysis and, while there is general agreement that a child's early experiences may be crucial for its later development, not all authorities were or are prepared to accept its

particular view of the nature of parent-child relationships. A more temperate formulation suggests that there are two crucial aspects to such relationships - commitment and continuity.³⁵ It can be seen that the conventional hospital experience, perhaps including elements which a child might construe as punitive, was certainly confusing and even frightening. The continuity of care was totally disrupted and carried out by a series of people, whose pattern of work precluded continuity and whose commitment was professional not personal. The young child's immature perception of time makes it difficult for him to regard these events, even though objectively they may be brief, as a temporary hiccup in an otherwise smooth life.

Controversy continued throughout the 1950's and the decade ended with the publication of the Platt Report on the Welfare of Children in Hospital.³⁶ The ideas of continuity and commitment underlie its main recommendations, that parents should have unrestricted access to their children at any reasonable hour during the day, that there should be facilities for the mothers of young children to be admitted with them and take part in their care, as could those who were visiting and that there should be more provision for their education and play, a more stimulating environment. The evidence about post-hospital disturbance was stressed, which ward staff had seldom been aware of: even parents believed that children were so spoiled in hospital that they were naughty when they got home.

The Ministry of Health adopted the recommendations and the Hospital Management Committees were enjoined to carry them out. Which might have been the end of the story, but that in the next few years it became apparent that the policies were not being carried out in most hospitals. In Charing Cross any reasonable hour of the day meant any hour of the day or night but in some places it meant one hour a day and perhaps not every day at that. Groups were set up by parents to campaign for the implementation of the policies, the National Association for the Welfare of Children in Hospital, began in London in 1961 and in Swansea, The Association for the Welfare of Children in Hospital in 1962. Here, too, in the mid-sixties a research programme began, directed by Margaret Stacey, which investigated the experience of the child in hospital (tonsils and adenoids again) the way they were affected by it and the feelings of families about hospitals and the needs of the child in hospital. It became clear that things were not working as

they should.

Visiting was being unofficially restricted, nurses did not feel that play and social contact with the children was part of the job, contact was largely restricted to nursing procedures and instructions, so the children spent 50 - 80 percent of their time alone and unoccupied. When parents were present, the nurses tended to carry on as though they were not, e.g. washing a child whose mother was sitting beside the bed. This confirmed the mother's feeling that she was in the way and not really needed, since few had any knowledge of the likely effects of their absence on the child.³⁷

The main reason for the failure of the policy at ward level also lay at ward level. Nurses were not convinced of the need for change and it was very difficult for them to accept that what they had been doing for their patients in good faith, was in fact harmful. The presence of outsiders in the ward watching them work, perhaps criticising it or threatening to usurp their functions, altered their working environment to a marked degree. Obviously neither of the parties to the situation who were expected to change their behaviour, the nurses and the parents, had been prepared or educated for it. A study by Pamela Hawthorn for the Royal College of Nursing covering a wider range of hospitals and conditions, confirmed that in the absence of their parents, child patients spent a lot of their time miserable and alone.³⁸

Mothers who had been admitted with their children often felt that they were unwelcome, one in a Canadian study felt she was regarded as 'an intruder, a carrier of infection and emotional disturbance'³⁹ for the idea that mothers upset their children took a long time to die. They also felt useless because the nurses were still doing the nursing and child, secure in his mother's presence, was probably acting his usual self. Meadow coined the phrase 'the Captive Mother' for this syndrome, but the conclusion was sometimes drawn that the mother should spend less time with the child patient, rather than be more involved with his care and given a place in the life of the ward.⁴⁰

In 1970 a new series of research studies was set up in Swansea which looked again at children having their tonsils removed, at the effect of introducing playleaders into two ordinary acute children's wards and the experience of two

groups undergoing long-term orthopaedic treatment, young children with a variety of conditions and teenagers with scoliosis. Visiting, though more relaxed, was still being restricted, bells were still being rung in some hospitals as a signal to depart, the formula 'sister likes visitors to come between such and such hours' was often used to inquiring mothers.⁴¹ The playleader was very popular with mothers and children and some nurses, but there was still conflict with conventional attitudes about the desirability of tidiness and symmetry in the ward.⁴²

The conditions of orthopaedic patients still tended to be deprived, the hospitals often remote and lacking in facilities for visitors. The treatment itself posed enormous restrictions and frustrations for which no outlet was provided^{43,44} despite the example provided by Eva Noble at Stanmore⁴⁵ while Agnes Hunt's introduction of unrestricted visiting for orthopaedic patients at Oswestry before the First World War had been ignored by almost everyone.⁴⁶ Mothers were not generally encouraged to stay with their children, even where facilities existed.

In some other countries, notably Holland and the United States, the trend was towards professionalizing the psychological care of children in hospital with 'mental health teams'⁴⁷ 'child life programs'⁴⁸ and play therapists or 'observers' (as they called them in Leiden) who acted as intermediaries between the child and the hospital, the hospital and the parents, even the parents and the child.⁴⁹ In Britain educational and play provision had expanded faster than unrestricted visiting and mothering-in. In Birmingham an experimental group of about a hundred children was admitted for tonsillectomy, accompanied by their mothers and compared with a control group, admitted in the ordinary way. The experimental group adjusted to hospital better, had less post-hospital behaviour disturbance and fewer post-operative complications.⁵⁰ The nurses, however, were still 'unanimous in their opinion that they preferred the children to be admitted on their own'.

In the last ten years, as new generations of nurses arrive in the wards familiar with the idea of unrestricted parental access from their training, attitudes and practice have changed. The National Association for the Welfare of Children in Hospital found a great increase in 24 hour access between 1975 and 1982.⁵¹ In the University Hospital of Wales, for example, in the Paediatric Unit visiting is

completely unrestricted in practice as well as policy and mothers or another relative can stay with any child and child visitors are permitted.

In the United States during the 1960's parallel with the movement providing professional psychological care on the ward alongside professional nursing care, another approach developed. The revolutionary idea was to return the care of, at any rate, some children in hospital to their parents. Children who did not need highly technical nursing care or whose condition required that their mother learn to carry out procedures at home, (diabetes and cystic fibrosis being obvious examples) were admitted to units with minimal or no nursing staff allocated. The first was opened in Lexington Kentucky⁵² in 1966 followed by Indianapolis⁵³ in 1971, Vancouver⁵⁴ in 1974 and Galveston, Texas⁵⁵ in 1977 to mention only some well documented examples. These Care-by-Parent Units, in which mothers or other family members learn the necessary techniques, have been found to provide efficient physical care, improved psychological care, a good opportunity for health education for families and good experience for medical students. It also cuts down hospital costs and the horrendous American hospital bills.^{56,57}

Obviously any style of delivery of care which is physically efficient, beneficial to the participants and offers the prospect of financial savings is worthy of consideration and in Professor Gray's department in Cardiff the involvement of some parents in nursing care has progressed to the stage of parent-care, that is the nursing is carried out by the mother or father. The development is being monitored in a research study which we hope will show how it can fit into the British hospital system.

Thus from a time in the eighteenth century when the need of sick children for their mothers was recognised, so that they were seldom admitted to hospital without them, families were more and more excluded from the care of their sick children. By the early part of the twentieth century, the competence of mothers to look after healthy children was being doubted until events showed that family relationships cannot be broken up with impunity. The development of family-centred paediatrics has gradually brought mothers and others back into the hospital, even granting them an important place in their child's care.

REFERENCES

1. White Franklin, A. 'Children's hospitals' in Poynter, F.N.L. (ed.) The Evolution of Hospitals in Britain, London: Pitman Medical, 1964, 103-21.
2. Charity Commissioners. 32nd Report of the Commissioners for Inquiring Concerning Charities, London: 1840, 56, 673.
3. Forbes, T.R. 'By what disease or casualty: the changing face of death in London' in Webster, C. (ed.) Health Medicine and Mortality in the Sixteenth Century, Cambridge: Cambridge University Press, 1979, 130-1.
4. Still, G.F. The History of Paediatrics: the Progress of the Study of the Diseases of Children up to the End of the XVIIIth Century, London: Dawson, 1965 [first printed 1931], 415, 420, 422.
5. White Franklin, A. op. cit., 104-7.
6. Creighton, C. A History of Epidemics in Britain Vol. 2, London: Cass, 1965, [first printed 1894], 854.
7. Nuffield Foundation. Children in Hospital: Studies in Planning, London: Oxford University Press, 1963, 1.
8. Cameron, H.C. Mr Guy's Hospital 1726-1948, London: Longman Green, 1954, 358.
9. White Franklin, A. op. cit., 112-3.
10. Smith, F.F. The People's Health 1830-1910, London: Croom Helm, 1979, 152, 155.
11. Nightingale, F. Notes on Nursing: what it is and what it is not, Glasgow: Blackie, 1974 [first printed 1859] 7 fn.
12. Priestley, H.E. The Evelina: the Story of a London Children's Hospital 1869-1969, London: Board of Governors of Guy's Hospital, 1969, 3.
13. ibid., 12.

14. Anning, S.T. The General Infirmary at Leeds Vol. 2, 1869-1965, Edinburgh: Livingstone, 1966, 62.
15. ibid., 63.
16. Williams, M. Fay, A Brief History of Hill House Hospital, Swansea: M.F. Williams, 1979, 3.
17. South Wales Evening Post 28th Jan. 1984 - 12th March 1984.
18. Sharp, E. The London Child, London: John Lane, 1927, 19-20, 33-4.
19. Hardyment, C. Dream Babies: Child Care from Locke to Spock, London: Cape, 1983, 175, 177-8, 182.
20. Bowlby, J. Child Care and the Growth of Love, Harmondsworth: Penguin, 1953, 13-74.
21. Burlingham, D. and Freud, A. Infants without Families, London, Allen and Unwin, 1944, 21, 105-6.
22. Cameron, H.C. The British Paediatric Association 1928-1952, London: British Paediatric Association, 1955, 32-3.
23. Spence, J.C. 'The care of children in hospital' Brit. Med. J. 1947, 1, 125-30.
24. Pickerill, H.P. and Pickerill, C. 'Elimination of cross-infection, an experiment' Brit. Med. J. 1945, 155-60.
25. Pickerill, C. and Pickerill, H.P. 'Elimination of hospital cross-infection in children - nursing by the mother' Lancet 1954, 425-9.
26. Skeels, H.M. Adult Status of Children with Contrasting Early Life Experiences, Chicago: Society for Research in Child Development, 1966, 17, 27-53.
27. Stott, D.H. Delinquency and Human Nature, Dunfermline: Carnegie United Kingdom Trust, 1950, 358.
28. Robertson, J. The Young Child in Hospital, London: Tavistock Publications, 1958, Preface [R. MacKeith].

29. Jackson, K., Winkley, R., Faust, O., Cermak, E., and Burtt, M. 'Behaviour changes indicating emotional trauma in tonsillectomized children' Pediatrics 1953, 12, 23-8.
30. Robertson, J. Film: A Two-Year-Old Goes to Hospital, London: Tavistock Child Development Research Unit, 1952.
31. Robertson, J. op. cit., 12-17, 26-7.
32. Douglas, J.W.B. 'Early hospital admissions and later disturbances of behaviour and learning' Develop. Med. Child Neurol. 1975, 17, 456-80.
33. Rutter, M. Maternal Deprivation Reassessed, Harmondsworth: Penguin Education, 1972, 53-78.
34. Skeels, H.M. op. cit., 27-53.
35. Hooper, D. 'Professional intervention in the parenting process' in Chester, R. et al. (eds) Changing Patterns of Child-bearing and Child Rearing, London: Academic Press, 1981, 167-75.
36. Platt, H. (Chairman) Report of the Committee on the Welfare of Children in Hospital, 1959, 16-26.
37. Pill, R. 'Sociological aspects of the case-study sample' in Stacey, M. et al. (eds) Hospitals, Children and their Families, London: Routledge and Kegan Paul, 1970, 85-126.
38. Hawthorn, P. Nurse, I want my Mummy, London: Royal College of Nursing, 1974, 70.
39. Roskies, E., Mongeon, M., and Gagnon-Lefebvre B. 'Increasing maternal participation in the hospitalization of young children' Med. Care 1978, 16, 765-77.
40. Meadow, S.R. 'The captive mother' Arch. Dis. Child. 1969, 44, 362-7.
41. Cleary, J. The Volume and Pattern of Visiting in a Children's Ward, Swansea: Medical Sociology Research Centre, 1973 (mimeo), 1-3.

42. Hall, D. and Cleary, J. The Hospital Playleader Research Project, Swansea: Medical Sociology Research Centre, 1974, 43-52.
43. Clough, F. 'The validation of meaning in illness-treatment situations' in Hall, D. and Stacey, M. [eds] Beyond Separation, London: Routledge and Kegan Paul, 1979, 54-81.
44. Jacobs, R. 'The meaning of hospital: denial of emotions' in Hall, D. and Stacey, M. [eds] Beyond Separation, London: Routledge and Kegan Paul, 1979, 82-108.
45. Noble, E. Play and the Sick Child, London: Faber and Faber, 1967, 25-312.
46. Hunt, A. This is my Life, Glasgow: Blackie and Son, 1938, 191-3.
47. Petrillo, M. and Sanger, S. Emotional Care of Hospitalized Children: an Environmental Approach, Philadelphia: Lippincott, 1972, 54-90.
48. Plank, E. Working with Children in Hospital, London: Tavistock Publications, 1964, 55-64.
49. Gobee, H. Personal communication.
50. Brain, D. and MacLay, I. 'Controlled study of mothers and children in hospitals' Brit. Med. J. 1968, 1, 278-80.
51. Thornes, R. '1982 Survey of parental access and facilities for families' Children in Hospital Update, 1983, 9, 6-7.
52. James, V. and Wheeler, W. 'The care-by-parent unit' Pediatrics, 43, 488-94.
53. Green, M. and Green, J. 'The parent care pavilion' Children Today 1977, 6, 5-8.
54. Tonkin, P. 'Parent care for the low risk and terminally ill child' Dimensions 1979, 56, 42-3.

55. Caldwell, B. and Lockhart, L. 'A care-by-parent unit: its planning, implementation and patient satisfaction', Children's Health Care 1981, 10, 4-7.
56. Lerner, M., Haley, J., Hall, D., McVarish, D. 'Hospital care-by-parent' Med. Care 1972, 10, 430-6.
57. Evans, R. and Robinson, G. 'An economic study of cost savings on a care-by-parent ward' Med. Care 1983, 21, 768-82.

THE HEALTH OF THE SCHOOL CHILD

John Hatch

In the autumn of 1880, Birmingham children were the subjects of an enquiry by Dr Priestley Smith, Ophthalmic Surgeon¹ to the Queen's Hospital. In a published pamphlet² he wrote ' . . . with the consent of the School Board, I examined the eyes of the whole of the children in four schools: Oozell Street, Bristol Street, Nelson Street, and Hope Street. Among 2,158 children, I found 99 who were short-sighted; that is a proportion of about 4.5%.' ³

This investigation into the eyesight of children attending school was one of the stimuli that focused attention towards the end of the 19th century on the general health of those who came under the educational care of the State. A similar survey had been done some 20 years earlier by Dr Cohn,⁴ of Breslau in Germany, and this work had led to changes in the design of school desks and the lighting of classrooms.

In England local action tended to precede that by Government. In 1893 Bradford School Board appointed a pioneer worker in this field, Dr James Kerr, Medical Officer. London had had one from 1890; such men confirmed the reports of both teachers and volunteer workers on Care Committees concerning the poor clothing, the skin diseases and general malnutrition prevalent in slum district schools.

At this time, the only measures taken by the State in regard to the health of school children were the issue of instructions concerning the exclusion of scholars during epidemics, and the passing of the Elementary Education [Blind and Deaf Children] Act 1893. This Act made it the duty of every school authority to make provision for the education of blind and deaf children in special types of

school.⁵

In 1898 a Board of Education committee recommended that legislation should be obtained to make it the duty of every school authority to decide 'what children not being imbecile are by reason of mental or physical defect incapable of receiving proper benefit from instruction in ordinary schools'. An Act⁶ of 1899 gave power to local education authorities to make similar provision for defective and epileptic children as the 1893 Act had done for the blind and deaf.

Medical examination of recruits for the Boer War at the turn of the century showed how poor was the general health of the nation, with over 30 per cent of young men unfit. Reports of the Royal Commission on Physical Training [Scotland] and the Interdepartmental Committee on Physical Deterioration strongly recommended the instituting of a system of medical inspection in schools, and also the provision of meals by voluntary bodies as already provided in some cities notably London.

The Board of Education in 1905 set up yet another enquiry into the medical inspection of school children and the supply of meals by voluntary agencies. The first result of this excessive amount of enquiry and discussion, extending over many years was the passing of the Education [Provision of Meals] Act 1906, which authorised local education authorities to associate themselves with any committee which would undertake to supply food, and to assist such with equipment and staff. Reluctantly it would seem the Act permitted the purchase of food when funds from private sources were either not available or were insufficient. The passing of the Act enabled progressive authorities like those of London, Manchester and Liverpool to extend the schemes already in operation for feeding needy children. Such a system in Liverpool, operated by teachers and voluntary workers, involved the issue to children of coupons which ensured the provision of a meal at the British Workman Cocoa Rooms.

The 1907 Education [Administrative Provision] Act created a medical inspection service which would inevitably develop in the direction of treatment for some of the defects found by school medical officers. A medical department was organised at the central offices of the Board of Education. Its duty was to stimulate and encourage local authorities to arrange

as rapidly as possible medical inspections at elementary schools. Children starting and leaving school were to be examined and these two groups called 'entrants' and 'leavers' were until 1912 the only children examined as a routine.

A number of education authorities realizing the great value of medical examination made arrangements on a voluntary basis for school medical officers to attend their secondary schools.

Much information was provided in the first five years of this service about the physical condition of several million children aged between 5 and 14 and it formed the basis of further improvement and extension in the care of pupils. School medical officers realized that there were many conditions in children under their care which unless dealt with would lead to partial or complete incapacity in later life. They had the opportunity to study the beginnings of disease in children notably rheumatism, heart trouble, tuberculosis, rickets and malnutrition and recognized that with early treatment these conditions might be cured or at least contained.

In 1912 the Board of Education issued regulations making available grants to local authorities for the provision of medical treatment limited to minor ailments discovered at school inspection. Such conditions were ringworm, other common skin disorders and defective eyesight. The latter was one of the most common findings and local authorities had now the money to provide suitable and inexpensive spectacles, free of charge. Priestley Smith had noted of the child who squints,

' . . . in nine cases out of ten he does so because he has flat eyes, and requires spectacles. If he is old enough to wear glasses and if he has not squinted long, the glasses may cure him.'

Less seriously he observed,

' . . . there is a notion abroad that squint is catching acquired by imitation, one person of another. The mother will tell you that her little boy got his habit of squinting from his big brother, or from the nursery-



School Medical Officer (examining child's eyes) : 'Now, little girl, can you see my finger?'
Child (cooly) : 'I shan't tell you.'

1909

Punch's delightful comment was prompted by the advent of the 'school doctor'. The Education [Administrative Provisions] Act of 1907 had made it the duty of local education authorities to provide for the medical inspection of elementary school children.

maid, or from another little boy at school. Now, as a matter of fact, squint is just about as catching as a broken leg or a double chin!'⁷

Out of consideration of the defects of vision arose the question of the size of type to be used in educational books and the proper lighting of classrooms, two subjects given immediate attention by the Board of Education some fifty years after similar steps on the Continent.

School dental clinics were set up also since it had been pointed out that now school dentistry must be 'conservative and constructive'.⁸

During the 1914-18 war the manpower shortage with medical staff absent in the armed forces, caused a cut in routine inspection of children, but at the close of the war the school medical service was given new impetus; by the passing of the Education Act in 1918 its duties and its opportunities were enlarged. Under the 1907 Act local authorities had the opportunity to provide medical care for sick children, but the Act of 1918 made it the duty of education authorities to provide to the satisfaction of the Board of Education facilities for the treatment of certain listed conditions. This obligation to provide treatment facilities came into force in August 1919, with the desired result that the school medical service of the early 1920s made rapid progress.

Also in 1919 the Ministry of Health came into being with Dr Addison of transpyloric plane fame⁹ as its first Minister. He, with his ministry, took over the centuries-old service, the Poor Law, but its administration continued precisely as before under the local government board without change of name or method. Under the surface however there was much thought and discussion about the future of this service. Interest in this subject was profound after the war not least as a result of the writings of Sydney and Beatrice Webb,¹⁰ who insisted on the need for social justice both in the interest of the working classes and of the community as a whole. It was not until the Local Government Act of 1929 that the Poor Law finally fell in the face of public opinion.

One advance of the third decade was the interest taken in the treatment of cripples stimulated by development of

methods used by orthopaedic surgeons during the Great War. The policy of the Board of Education was to encourage local authorities to develop comprehensive orthopaedic schemes embracing prevention treatment and education.

Another development of great significance was an increased interest in the maladjusted child. From its inception in January 1908 the school medical service had centred its main activities on the physical care of children but routine inspection year by year disclosed many thousands of children whose defects were mental not physical. It was recognised that such children, often presenting with 'behaviour problems' were maladjusted towards their homes, parents or some other part of their environment and might become juvenile delinquents.

The Chief Medical Officer of the Board of Education wrote in 1930,¹¹ 'In the work of the school medical service we must recognise that conditions which lead to the reformatory, prison, hospital or asylum may have been developing during school life and that accordingly manifestation of persistent abnormality in children demands the close attention of the school medical officer'. Out of this, Child Guidance Clinics came into existence and from their inception it was realized that a team consisting of a psychiatrist, psychologist and a social worker might, by pooling their observations, diagnose and treat in the best possible way the problem child.

The great industrial depression of 1929-35 slowed progress in the provision of meals at school. In 1934 however a milk surplus caused the Government to give money to the Milk Marketing Board so that school children could receive a third of a pint of milk daily. Parents willingly paid the halfpenny charge. Twelve years before in 1922 a very practical experiment carried out in Birmingham had shown conclusively that childrens' health improved on a 'pinta' a day.¹² In addition to an increase in weight and a rise in the haemoglobin content of the blood, the School Medical Officer saw in each child 'a notable improvement in mental and bodily vigour and alertness'.¹³ Some credit for these dramatic changes must go perhaps to the biscuit each of the thirty children received 'through the generosity of a Birmingham firm . . . to accompany the milk'.

With the outbreak of the Second World War in 1939, new problems had to be faced engendered by the mass movement of

evacuees from one part of the country to another. Despite this, things were not allowed to slide and this time school meals and milk continued to be provided. With peace in sight the Education Act 1944 ensured that local authorities would provide 'comprehensive facilities for free medical treatment for pupils in attendance at any school or county college'. In 1945 the School 'Medical' Service became the School 'Health' Service and three years later the latter was incorporated into the National Health Service.

Priestley Smith wrote in 1880:

'Children who suffer from ulceration of the eye either have constitutions delicate from birth, or have become delicate through one cause or another; through having improper kinds of food, or too little food, or even too much food; or through being insufficiently clothed and exposed to damp and cold; or through being reared in close unhealthy places, where they pine for want of fresh air and sunshine . . . ; or as is too often the case in our large towns, from all these causes in combination.'¹⁴

It was the common sense and concern of such socially conscious individuals that won care for deserving children. Gradual enlightenment came not dissociated from the growth of the Labour Movement. One hundred years on there is no cause for complacency. With the demise of school milk, whilst rickets appears in Asian girls in our cities,¹⁵ one fears that school children may yet still in the future have to accept the now perhaps enriched-biscuits from a 'generous' Birmingham firm.

REFERENCES and NOTES

1. I am grateful to Mr Tony Sabell for his biographical notes and bibliography which accompanied a Commemorative Exhibition on Joseph Priestley Smith, 1845-1933, and Albert Edward Turville, 1890-1965, at the Department of Ophthalmic Optics, Aston University, Birmingham in December, 1975.
2. Priestley Smith, J. Eyesight; and how we lose it, Birmingham: Hudson and Son, c. 1882.
3. The actual detailed results were published in Priestley Smith, J. Short-Sight in Relation to Education, an address delivered to the Birmingham Teachers' Association on November 2nd, 1880. Birmingham: The Midland Educational Company, 1880, 20.
4. Cohn, H. Untersuchungen der Augen von 10,060 Schulkindern, nebst Vorschlaegen zur Verbesserung der den Augen nachtheiligen Schuleinrichtungen, Leipzig: 1867.
5. In a collection of contemporary photographs in the Central Library, Birmingham, one taken by W. Woollaston in 1896, shows a group of children sitting beneath a large notice which reads 'Birmingham School Board Classes for the Deaf' ref. WK/BII/5154, 5176.
6. Education [Defective and Epileptic Children] Act 1899.
7. Priestley Smith, J. op. cit., 54-5.
8. Many young men wishing to join the army were turned down on account of their teeth. A cartoon in Punch in 1914, showed a would-be recruit remonstrating to the Medical Officer 'Man, ye're making a gran' mistake. I'm no wanting to bite the Germans, I'm wanting to shoot 'em'.
9. The transpyloric plane lies half way between the xiphisternum and the umbilicus. Addison, C. 'On the topographical anatomy of the abdominal viscera in man' J. Anat. Physiol. 1899, 33, 565.

10. See especially:
Webb, S. and Webb, B. The prevention of destitution
Webb, S. (ed.), 1911.
Royal Commission [1905-1909] on the Poor Laws and
Relief of Distress, 1909.
11. Chief Medical Officer, Board of Education Annual Report
1930, H.M.S.O.
12. City of Birmingham Education Committee Minutes, 10th
Nov. 1921 - 27th Oct. 1922, 363. [Hygiene Sub-
Committee's Report 29th Sept. 1922].
13. City of Birmingham Education Committee Minutes, 10th
Nov. 1922 - 26th Oct. 1923, 302-303 [Hygiene Sub-
Committee's Report 29th June 1923]. A clue to the
provenance of the biscuits may perhaps be the presence
of Councillor Mrs George Cadbury at the meeting of the
latter.
14. Priestley Smith, J. op. cit., 52.
15. Bennett, J. Personal communication.

PAEDIATRIC SURGERY

J.D. Atwell

Paediatric surgery is a young specialty. The first consultant paediatric surgeon in the British Isles was appointed in Scotland in 1919. In England and Wales it has mainly been a development following the end of the Second World War and even now there are areas in England without their own regional paediatric surgical centres.

The surgery of childhood has existed for many centuries and probably from time immemorial. There are difficulties about the specific history of paediatric surgery as it is closely integrated with the developments of surgery, paediatrics, anaesthesia, biochemistry, radiology and pathology. Much of the progress in paediatric surgery centres around the origin of children's hospitals in the last century, the personalities of the practising surgeons, the formation of learned societies with the interests of the specialty at heart and specific scientific journals (see Table 1). In a lecture of this length I can only highlight some of these developments with thumbnail sketches of the changes which have occurred, some gleaned from the literature and some from personal experience.

Table 1

HISTORY OF PAEDIATRICS: MEDICAL AND SURGICAL

DEVELOPMENT OF PAEDIATRICS	PAEDIATRIC MEDICINE	PAEDIATRIC SURGERY
1st hospital for children	1837	1837
1st journal in specialty	1843	1966
1st academic department	1861	1958

THE WESSEX REGIONAL CENTRE FOR PAEDIATRIC SURGERY

I thought it would be of interest to start with the present day and to review briefly the surgical work load of our unit in Wessex. The unit was opened 15 years ago to provide a regional service for neonatal surgery, for the surgery of children with solid tumours, and for specialized paediatric urological and gastro-enterological surgery. Our unit also provides a district service for the general surgical conditions of children which include head injuries, children with abdominal pain, hernias, undescended testes, etc. [see Table 2].

DEFINITION OF PAEDIATRIC SURGERY

Paediatric surgery is one of the most vigorously growing fields in surgery. It differs from other specialties in surgery¹ as it is primarily age orientated rather than organ or system orientated. There has been an artificial subdivision into neonatal and paediatric surgery, but the consensus of opinion is that neonatal surgery is part of paediatric surgery. Increasing specialisation within paediatrics is however now occurring in paediatric surgery. For example there are three surgeons in this country confining their work to paediatric urology; there are cardiac and neurosurgeons in similar situations. The bulk of the general surgery of childhood in the British Isles is still carried out by general surgeons and not paediatric surgeons. This results in much of the post-operative care being undertaken by paediatricians. The important theme is that the best interests of the child as a whole must be paramount: these interests must not be lost with the advances of the technological era in surgery and medicine today.

Table 2

SURGICAL WORK LOAD IN THE
WESSEX REGIONAL CENTRE FOR PAEDIATRIC SURGERY DURING 1983

Total Admissions: 3252

Neonatal Admissions: 111

O.A. + T.O.F.	7
Diaphragmatic hernia	5
Gastro-intestinal	29
[incl. necrotizing entero-colitis	8]
Exomphalos	5
Spina bifida	16
Genito-urinary	13

Other Specific Operations

Ramstedt's Operation	40
Intussusception	19
Appendicectomy	195
Revision of V.A. shunts	89
Reimplant of ureters	45
Pyeloplasty	7

Other Specific Admissions

Abdominal pain	380
Head injuries	475
Malignant disease	16

Day Case Operations: 1219

Circumcision	287
Inguinal hernia	203
Orchidopexy	125
E.U.A. endoscopy	160

CIRCUMCISION

The operation of circumcision dates back over six thousand years and although not the oldest operation performed on children it must be by far the commonest. The Egyptians were the first to practise the procedure and it was done either by the priests or barbers, a practice which still survives today in parts of the world.²

In some paediatric circles circumcision is said to head the list of unnecessary operations and certainly in countries without a health service circumcision is a highly remunerative procedure. Remuneration can be of different kinds, Saul instructed David to bring 100 foreskins as evidence of killing 100 Philistines in order to prove his worth as a son-in-law: he returned with 200. In Africa it is part of the puberty initiation ceremony; in Kenya an uncircumcised man cannot build a house of his own, eat certain foods at a feast, or have intercourse with a Kikuyu woman. In parts of West Africa the foreskin is dipped in brandy after the operation and fed to the patient. We send them fresh to the pathological laboratory for specific histochemical studies!

PYLOROMYOTOMY

By contrast pyloromyotomy is an operation of relatively recent origin but one of the most significant in paediatric surgical practice and has resulted in the saving of many children's lives since its inception in 1911 by Ramstedt.³

The physical signs of congenital hypertrophic pyloric stenosis at a post mortem examination were described by Blair in 1717 and Beardsley in 1788.⁴ It was nearly another 100 years before Harald Hirschsprung described the pathological anatomy and clinical features of the condition in 1887.

The understanding of the anatomy and clinical features led to the initial attempts at surgical correction, the first success being achieved in 1898 by Loebker who performed a posterior gastroenterostomy. Nicol in 1900 tried forcible dilatation of the pylorus and three years later Cantley and Dent had success with pyloroplasty. Dufour and Pierre Fredet suggested splitting the muscle in 1908 but then sutured over the circular muscle. Ramstedt in 1911

developed the present day operation of splitting the muscle without suturing. The first success from this procedure occurred because of anaesthetic difficulties which had required the urgent cessation of the operation before suturing; the patient recovered and was cured! Thus the high mortality of 50 - 70% for a gastroenterostomy has gradually been reduced to the low levels of today with a mortality of 0.1%.

This improvement in mortality has not just been due to the surgical operation but also due to the improvements from advances in resuscitation of the dehydrated and biochemically disturbed infant. The operation is no longer an emergency procedure. Correct pre-operative preparation is vital and is as important as the operation. It also highlights other developments in the care of the child, namely the availability of expert paediatric anaesthesia. In the past the operation was performed under local anaesthesia and in many centres this was safer than a general anaesthetic. Surgeons can kill patients slowly by their mistakes, anaesthetists can kill them quickly!

UMBILICAL AND INGUINAL HERNIOTOMY

Paul (625 - 690 A.D.) was born on the island of Aegina. He was educated and practised in Alexandria for many years as a surgeon and obstetrician. He wrote a large work of seven volumes. The first included children's diseases and chapter XXI was 'on rupture or hernia in infants'.⁵

'There sometimes happens to infants a horrible condition against nature and commonly called rupture whether it be said to the peritoneum ruptured or towards the groin or towards the oxeum or in part of the breast or near the umbilicus, but the proper term for it is hernia.

. . . and happens to infants from excessive crying or from fall upon the stomach or from flatulence contained in the intestines.'

He gives some advice to adults for 'it may happen to adults also from other causes especially upon overeating, or on account of jumping, or yelling or sexual intercourse . . .'

He gives various prescriptions for plasters for local application for intestinal rupture, the shortest of which is:-

R

Nucis cypressi, thuris, acaciae,
balaustiae, sarocollae, sanguinis,
sumach, lycii, myrrhae, terebinthinae

ana ʒi

quantum sufficit ad inspissandum

Let it be applied to the rupture

Bartholomaeus Metlinger published in 1473 the second recognisable textbook of paediatrics. Eight editions were printed by 1539. In the third chapter of this book he reported 'Little ruptures came on in children from much crying, yelling or hard coughing'. He prescribed a plaster of wax and turpentine and to lay it on with 'a little bellyband' - the old fashioned penny and strapping of centuries later!

The differential diagnosis of a soft fluctuant swelling includes an abscess. This has led to mistaken diagnoses, especially in an era when infection was so rife. These errors have been harmful both to the patient and the surgeon as recounted by Ambroise Paré in 1634.⁶.

'Let not the chirurgian assay to open that abscesse, for if it be opened, the guts come out through the incision, as I have seen in many, and especially in a child of my Lord Martignes. For when Peter of the Rocke, the chirurgian, opened an abscesse that was in it, the bowels ranne out of the incision, and the infant died, and it wanted but little that the gentlemen of my lord's retinue that were there had strangled the chirurgian.'

It was some centuries before it was realised that many umbilical hernias close spontaneously with time, and that surgery can often be avoided. However, there are exceptions with umbilical hernia which persist into late childhood and require operative repair.

APPENDICECTOMY 7

The operation for acute appendicitis remains one of the most frequently performed paediatric surgical operations and is amongst the commonest causes for the emergency admission of a child to hospital [see Table 2].

The first record of perforation of the appendix in a child is recorded in the Philosophical Transactions of the Royal Society in October 1736 by Claudius Amyand of St Georges Hospital. An 11 year old boy had a discharging sinus from a scotal hernia which was found to contain the appendix perforated by a pin. The patient's recovery from this operation is recorded in the following words:

'Tis easy to conceive that this operation was as painful to the patient as laborius to me. It was a continued dissection attended with danger on parts not well distinguished: it lasted near half an hour and the patient bore it with great courage.'

Nearly 100 years later in 1812 James Parkinson recognised perforation of the appendix as a cause of death and in 1839 Thomas Addison described acute appendicitis. Nearly 50 years went by before T.G. Morton reported the first successful appendicectomy in 1887. The classical description by Charles McBurney of the five symptoms and signs led to improvement in the diagnosis of this condition. Since then appendicectomy has been commonplace but associated with a high morbidity due to the difficulties in diagnosis of the acute abdomen. The incidence of perforation in this country is approximately 20% but as high as 50% in underdeveloped countries, where delay in admission to hospital is commonplace.

Recent history in the saga of acute appendicitis has been the reduction in morbidity, due to improved antibiotic therapy in the patient with perforation of the appendix: pelvic and subphrenic abscesses are now an infrequent complication with the use of antibiotics such as the cephalosporins and metronidazole.

The organization of neonatal surgical services is a recent event, the first Regional Unit being opened in Liverpool in 1953; ours in Wessex in April 1969. Occasional reports did appear in the literature of successful operations on neonates but the mortality was as high as 72% even in the main teaching centres in the British Isles. In fact, a report by the Ministry of Health⁹ in 1949 on neonatal mortality and morbidity stated 'Our knowledge of the causes of neonatal death is incomplete and the prevention and treatment of some forms of neonatal illness are far from satisfactory ... These subjects offer great scope for research. Many can play a part in this work; paediatricians, obstetricians, anaesthetists, physiologists and social workers.' This means that considered medical opinion in the late 1950's was unaware that surgery had anything to offer.

Why was the neonatal mortality so high? It was mainly due to the failure to have standard diagnostic procedures, which led to delay in diagnoses. Transport facilities were inadequate and there was a failure to concentrate the admission of such infants into specialized units. These factors coupled with the rarity of most neonatal surgical conditions made it essential that neonatal surgery should form part of tertiary care on a regional basis, where units should drain the newborns from a population area of about 2 million. Such a unit should now be staffed by up to four consultant paediatric surgeons, i.e. 1 per 500,000 population.

Only in recent years has most of England and Wales been serviced by Regional Neonatal Surgical Units. In fact, in some areas the service is still deficient, e.g. in East Anglia. The expense involved in such highly intensive care units is considerable, but we are trying to achieve a 70 year survival for the majority of patients, with considerable benefit to the community.

Economic considerations have to be considered and the saga of the surgical treatment of spina bifida provides one such example. The expense, together with poor results and poor quality of life, has led to selective treatment rather than elective treatment. This poses ethical, theological, philosophical and moral questions which often remain unanswered. We are fortunate that the true incidence of

spina bifida appears to be decreasing and antenatal diagnostic procedures can sometimes lead to a recommendation for therapeutic abortion.

The advances in neonatal surgical care have largely been related to resuscitation and parenteral nutrition which allow the neonate to grow. The first successful repair in England of oesophageal atresia and tracheo-oesophageal fistula was by Mr R.H. Franklin in 1947; in fact that infant was born in Portsmouth and taken to London by Mr Younghusband a local consultant general surgeon.¹⁰ This was just prior to the establishment of the National Health Service. The mortality of this condition in the uncomplicated patient is now less than 5%.

DAY SURGERY ¹¹

Day surgery for children is not a new idea, although the reasons for it now differ from those when Nicoll¹² introduced it at the Royal Hospital for Sick Children in Glasgow at the turn of the century. In 1909 he reported a series of 8988 patients treated on a day basis which includes 406 for hare lip and palate, 36 for spina bifida, 18 for congenital pyloric stenosis and 220 for inguinal and umbilical hernia.

Nicoll's conclusions about day surgery at that time are as relevant today as then:-

1. A much larger share of the operation work load of a children's hospital should be handled on an outpatient basis, for the treatment of a large number of in-patients is a waste of the resources of a children's hospital or ward.
2. Patients treated in the outpatient theatre should be largely infants and young children because such children with their wounds closed by collodion or rubber plaster are easily carried home in their mother's arms and rest there more quietly on the whole than anywhere else.
3. Separation of the child from the mother is harmful.

4. Pre-operative skin preparation is unnecessary.

5. Experience of herniotomy, abdominal section and other operations in young children treated as outpatients is gradually reconciling me to the view that we keep similar cases in adults too long in bed.

The advantages of a day unit for children are several^{13,14} and yet today there is still a reluctance in many districts, areas and regions to provide this form of care. This is due in the main to lack of interest by the medical profession in implementing change especially as in many areas the surgery of childhood takes second place to the requirements of adult surgery.

PAEDIATRIC SURGICAL SOCIETIES AND ASSOCIATIONS

I am indebted to Mr Valentine Swain, an old colleague of my time at the Queen Elizabeth Hospital for Children, London who has written a short account of the Genesis of the British Association of Paediatric Surgeons.¹⁵ At the turn of the century Sir William Osler commented 'the organization of societies for the study of particular diseases has been of late a very notable feature in the professional life of this country'. The function of these societies was to stimulate work, promote friendships and to help in maintaining professional standards. The British Association of Paediatrics was formed in 1928 [see Table 1] having been preceded by the formation of the American Pediatric Society in 1920. The first president of the British Paediatric Association was Sir Frederic Still who confined his practice entirely to children and whose abiding interest in the history of paediatrics resulted in the publication in 1931 of his History of Paediatrics which was reprinted in 1965.

After the Second World War travel and interchange once again became possible. Young paediatric surgeons visited centres in the United States and America and Europe. David Vervat who was appointed as a paediatric surgeon at the Sophia Hospital in Rotterdam visited centres in the U.S.A. including those of William Potts in Chicago and Robert Gross and Orvar Swenson in Boston. Later he visited Great

Ormond Street and met Peter Rickman, Harold Nixon, David Waterston and John Bentley - all except David Waterston were surgical registrars at that time. David Vervat thought that a society for paediatric surgery should be established as so many surgeons in the specialty were working in isolation. He visited Edinburgh, Glasgow, Liverpool and Sheffield and informal discussions continued with the aim of forming such a society.

In October 1952 Dennis Browne was a guest at the annual meeting of the American Academy of Pediatrics. Robert Zachary, David Waterston and Peter Rickman delivered papers at the same meeting. At that time there were only 50 - 60 paediatric surgeons in the world. A year later a special meeting was held at the Hospital for Sick Children with Denis Browne as Chairman; a decision was made to form a society called 'The British Association of Paediatric Surgery' with overseas members and Denis Browne became its founder President.

The objects of the Society were:

1. Advancement of the study, practice and research in paediatric surgery.
2. Promotion of the teaching of paediatric surgery, both undergraduate and postgraduate and advice on training of paediatric surgeons.
3. Advice on paediatric surgical services in the British Isles.
4. Promotion of friendship with paediatric surgeons overseas.

The inaugural meeting of the Society was held at the Royal College of Surgeons of England between 30th June and 2nd July 1954. It was a great success and the membership has now grown to 619 members of whom 87 are U.K. members and no less than 450 are overseas members. The annual meeting of the B.A.P.S. has become the main annual international meeting for paediatric surgeons throughout the world.

The growth of paediatric surgical associations has now increased and there are now 49 such societies. A vast increase from the turn of the 20th century commented upon by Sir William Osler in his Counsels and Ideals in 1905.

THE BOOKS

The dissemination of knowledge by the printed work is a relatively late development in historical terms. The first three textbooks of paediatrics were published in 1472, 1473 and 1483 by Paolo Bagellardo, Bartholomaeus Metlinger and Cornelius Roelants. The second of these ran to eight editions between 1475 - 1539. In England The Boke of Chyldren by Thomas Phaere¹⁶ was published in 1545 and listed 'The Infirmities of Children' which included surgical and medical conditions:

Diseases in the eares	The Stone
Swelling of the navill	Pyssing in bed
Swelling of the coddess	Brustying
Quinsye or swelling of throte	Fevers
Colicke and rumbling in the guttes	Goggle eyes
Stopping of the belly	Fallyng of the fundament
Feblenes of the stomacke and vomitinge	

Textbooks on paediatrics were an infrequent occurrence until the second half of the nineteenth century. The increase then and since was partially due to the buildings of hospitals for children, so well described by Charles Dickens in Our Mutual Friend. 'We want to move Johnnie to a place where there are none but children, a place set up for sick children, where good doctors and nurses pass their lives with children, talk to none but children, touch none but children, comfort and cure none but children.'

The publication of surgical textbooks lagged behind medical books - mainly due to the learned nature of physicians compared to surgeons who were 'unlettered, lower class men who were scorned in clerical circles'. However, the invention of gunpowder and the study of anatomy improved the lot of the surgeon and in 1540 the Single Company of Barber-Surgeons was formed. This union lasted 200 years and was dissolved in 1745. In 1800, George III granted the Charter of the College of Surgeons and in 1843 Queen Victoria granted the Charter of the Royal College of Surgeons of England. Surgeons became respectable.

Ambroise Paré [1510 - 1590] ⁶ published the first classical textbook of surgery; the publication of the English

translation was delayed until 1634. The first treatise on infant surgery was published by Felix Würtz; the Practica Der Wundartzney in 1563. He had a busy practice in Basel.

The year 1860 was the turning point for the publication of books on surgical paediatrics. Athol W. Johnson delivered three lectures at the Hospital for Sick Children, London on 'The Surgery of Childhood' which were published in 1860. The same year J. Cooper Forster, a surgeon at Guy's Hospital and The Royal Infirmary for Children, published Surgical Diseases of Children. Thomas Bryant published The Lettsomian Lectures on Surgical Paediatrics in 1863. Very little then appeared until the two volume standard reference book of Surgery in Childhood by Sir John Fraser¹⁷ of Edinburgh, published in 1926 and the classic book by L.E. Barrington Ward published in 1928 on The Abdominal Surgery of Children. The latter author did much to stress the importance of having children's trained nurses in surgical wards.

In the U.S.A. Surgical Diseases of Children: A Modern Treatise on Paediatric Surgery¹⁹ by S.W. Kelley was published in 1909. Later the surgical results of the Boston Children's Hospital became renowned through Abdominal Surgery of Infancy and Childhood²⁰ by William Ladd and Robert Gross published in 1941 and later in the 1950's. This publication was followed by The Surgery of Infancy and Childhood by Robert Gross.²¹ This book reported their excellent results with neonatal surgical emergencies and heralded a new era in the development of paediatric and neonatal surgery.

THE MEN 5,22

It is extremely difficult to single out men who have made outstanding contributions to paediatric surgery. So many have contributed that it is a daunting task made even more difficult by trying to decide which feature of their contribution has been most significant.

Francis Glisson [1597 - 1677]²² is renowned for his work on anatomy of the liver and rickets. He was one of the Founding Fellows of the Royal Society, Censor of the Royal College of Physicians in 1656 and its President between 1667 - 1669.

Richard Wiseman [1622 - 1676] began his surgical career as a naval surgeon with the Dutch and later the Spanish. He served under Charles I as an army surgeon and was at the siege of Weymouth. His career ended with the defeat of the king's forces at Worcester. Later he became a surgeon in London but in 1654 was arrested and imprisoned in Lambeth House. He was released and Charles II after his return gave him the warrant of 'King's Surgeon'. He left a very clear account of tuberculosis in children at that time - a common disease for many centuries to come. He also wrote the first surgical book to have the approval of the Royal College of Physicians!

William Cadogan [1711 - 1797] was made a physician to the Foundling Hospital in 1754. His Essay upon Nursing and the Management of Children - from their birth to three years of age, published in 1750, went to nine editions in 20 years. He was probably the first to stress the importance of the nursing care for children.

Michael Underwood [1737 - 1820] an obstetrician, physician and surgeon published his Treatise on the Diseases of Children in a single volume in 1801 and divided into medical, surgical and care of children sections. It became the accepted textbook of paediatrics for over 60 years.

The Heberdens, both the father William [1710 - 1801] and his son [1767 - 1845] published An Epitome of the Diseases Incident to Children in English in 1805. It contained chapters on meconium, rectal prolapse, hernia, hydrocele, hydrocephalus and spina bifida. The description of spina bifida is difficult to improve upon:-

'The spina bifida, or cleft spine is distinguished by a soft tumour on some part of the back bone, chiefly about the loins. For the spinal process of one or more of the vertebrae is either entirely wanting, or is divided; and the membrane which contains the spinal marrow is distended with a fluid and projects outwards. When this bursts, there succeeds an inflammation of the spinal marrow, which is speedily fatal. Children who are the subjects of this disorder rarely survive 15 months.'

Finally no record of paediatric surgery would be complete without Denis Browne (1892 - 1967). He was the first surgeon in England to devote himself entirely to children. The selected writing of Sir Denis Browne have recently been published.²³ Denis Browne inspired the development of paediatric surgery as a specialty in its own right; it is no longer a sub specialty of general surgery. One of the highest honours which can be bestowed upon a paediatric surgeon is the award of the Denis Browne Medal which states on the obverse side, 'The aim of paediatric surgery is to set a standard not to seek a monopoly'.

HOSPITALS FOR CHILDREN

In the middle of the 19th century, London was dirty, squalid and unhealthy. In 1850, of 50,000 deaths in London 21,000 were children under 10 years old. Young children were excluded from hospital because of infection. In 1852 Dr Charles West founded a hospital for sick children at 49 Great Ormond Street. Co-founder of this now famous children's hospital was Dr Henry Bence Jones. The work at Great Ormond Street expanded quickly. With support from Queen Victoria, Lord Shaftesbury and Charles Dickens the hospital had increased from 22 to 240 beds by the turn of the century. Since then further expansion has occurred and in 1946 it became the site for the Institute of Child Health of the University of London. It was devoted to research and the teaching of postgraduates from all over the world. It was at the Institute of Child Health that the first Academic Chair in Paediatric Surgery was established in 1958. The second Academic Chair in Paediatric Surgery was established at the Alder Hey Hospital only in recent years.

Children's hospitals have been built from the end of the 19th century until the last decade - the last large children's hospital to be built was the Royal Hospital for Sick Children in Glasgow. The policy of the D.H.S.S. is not to build any more children's hospitals, but to establish children's departments in district and teaching hospitals. Thus within 130 years the wheel has come full circle since the foundation of the Hospital for Sick Children at 49 Great Ormond Street.

THE FUTURE OF PAEDIATRIC SURGERY

In conclusion, the future of paediatric surgery is assured by developments in antenatal diagnosis, prevention of deformities, nuclear medicine imaging and intrauterine therapeutic procedures. This increase in specialization is similar to the changes occurring throughout medicine and surgery.

For paediatric surgery nothing more apt than the statement of Sir George Frederic Still⁴. 'It is good that we should know the past of medicine, its failures and its follies, its strivings and its successes, they are chastening and stimulating.'

REFERENCES

1. Atwell, J.D. 'Everyday paediatric surgery' in Hadfield, J. and Hobsley, M. [eds] Current Surgical Practice, London: Edward Arnold, 1981, 3, 174.
2. Illingworth, R.S. 'Overtreatment down below' World Medicine, 1977, 21-4.
3. Benson, C.D. et al. [eds] Paediatric Surgery Vol. 2, Chicago: Year Book Publishers Inc., 1962, 670.
4. Still, G.F. The History of Paediatrics, London: Reprinted by Dawsons, 1965, 398.
5. Ruhrah, J. Paediatrics of the Past: An Anthology, New York: P.B. Hoeber, 1925, 65.
6. Johnson, T. [ed.] Works of Ambroise Paré, 1634, 959.
7. Benson, C.D. et al., op. cit., 790.
8. Rickman, P.P. and Johnston, J.H. [eds] Neonatal Surgery, London: Butterworth, 1969, Chapter 2.
9. Rep. Publ. Hlth Subj. No. 94. Ministry of Health, 1949.
10. Younghusband, J. Personal communication, 1984.
11. British Paediatric Association: British Association of Paediatric Surgeons. Day Care in Hospitals, Joint Report, London: British Paediatric Association, 1975.
12. Nicoll, J.H. 'The surgery of infancy' Brit. Med. J. 1909, 2, 753-4.
13. Atwell, J.D., Burn, J.M.B., Dewar, A.K., and Freeman, N.V. 'Paediatric day case surgery' Lancet 1973, 2, 895-7.
14. Gow, M. and Atwell, J.D. 'The role of the children's nurse in the community' J. Pediatr. Surg. 1980, 15, 16-30.

15. Swain, V.A.J. The Genesis of the British Association of Paediatric Surgeons, Downs Surgical P.L.C., 1981.
16. Phaire, T. The Boke of Chyldren, Reprint, Edinburgh and London: E. and S. Livingstone, 1955.
17. Fraser, J. Surgery of Childhood 2 Vols, London: Edward Arnold, 1926.
18. Barrington Ward, L.E. The Abdominal Surgery of Children, London: Oxford Medical Publications, 1928.
19. Kelley, S.W. Surgical Diseases of Children: A Modern Treatise on Paediatric Surgery, New York: E.B. Treat, 1909.
20. Ladd, W.E. and Gross, R.E. Abdominal Surgery of Infancy and Childhood, Philadelphia and London: W.B. Saunders, 1941.
21. Gross, R.E. The Surgery of Infancy and Childhood, Philadelphia and London: W.B. Saunders, 1956.
22. Levinson, A. Pioneers of Pediatrics, New York: Froben Press, 1943.
23. Nixon, H.H., Waterston, D., and Wink, C.A.S. Selected Writings of Sir Denis Browne, London: The Trustees of the Sir Denis Browne Memorial Fund, 1983.

WHITLOCK NICHOLL (1786 - 1838) AND PAEDIATRICS

Peter H. Thomas

'Quaecunque porro ex observatis ad congrua demonstrationis principia applicatis, casti ope ratiocinii, legitime deducta sunt; quanquam per se in sensus non cadunt; non minorem profecto fidem merentur.' Gaubius. Institut. Pathol. Med. 20.

[From title-page, Nicholl's Practical Remarks . . .]

HIS BRIEF LIFE

Although I have given an account of the life and work of Whitlock Nicholl in a previous communication,¹ I feel obliged to give a résumé of that life for the better understanding of the theme of this present paper. He was born in Treddington Rectory, Worcestershire. His father, the Rev. Illtyd Nicholl, D.D. was heir to the Ham Estate, Llantwit Major. Before settling at Treddington, Dr Nicholl had already made a mark for himself as a Fellow and Tutor of Jesus College, Oxford. Unfortunately, Illtyd Nicholl died suddenly in 1787, leaving his family in straitened circumstances. When Whitlock was three years old he was sent to Remenham in Berkshire to be brought up by his uncle, the Rev. John Nicholl and his wife who also acted as his tutors. In 1798, the Rev. John Nicholl resigned his living and retired to Cowbridge, taking his wife and Whitlock with him. Four years later Whitlock became apprenticed to Mr Bevan of Cowbridge who, for three years, taught the teenager the rudiments of general practice.

In 1805 Whitlock Nicholl repaired to London in order to

pursue more advanced medical studies. In the following year he became a student at St George's Hospital under Sir Everard Home, who was brother-in-law to John Hunter. In 1808 Whitlock accepted a post as resident surgeon at the Lock Hospital and in the following year, at the age of twenty-three, he gained his diploma of the Royal College of Surgeons. Returning to Cowbridge Whitlock was given a partnership by his uncle and former master, Mr Bevan. Whitlock was put in charge of all midwifery and surgery while his senior partner carried on the physician's side of the work. On 12 July 1812 Whitlock Nicholl married Margaret (Peggy), daughter of the late Rev. Robert Rickards at Llantrisant Church.

In 1817 Whitlock and his wife settled at Ludlow where he practised medicine as a consultant physician. He then took his M.D. degree at the Marischal College, Aberdeen, and consolidated his academic position by sending £63 3s to Lambeth Palace for his degree of Doctor of Physic. In their desire to have a family the couple were extremely unlucky in that Margaret had several miscarriages, followed by a full-term pregnancy, which ended with the sacrifice of the child to save the mother. This was the end of their parental hopes. Nicholl now took up academic studies with great vigour and at the same time wrote much verse. In 1819 he began to write as an authority on medicine in the London Repository. As the busy years rolled by Whitlock's prestige as a consultant physician, scholar, and writer increased considerably.

By 1826 Dr and Mrs Nicholl had left Salop and were living in London. Before proceeding to the Metropolis he journeyed to Scotland on two occasions for the purpose of completing his third Doctorate of Medicine at Glasgow University. Shortly after settling down in London he became a member of the Royal Institution, the Atheneum, and the Royal College of Physicians; also a Fellow of the Linnean and the Royal Medical and Surgical Societies. He was on intimate terms with such distinguished doctors as Sir Benjamin Brodie and Sir Henry Hallford.

Whitlock's professional enjoyment was short-lived for in 1831 his wife Peggy died of a malignant condition of either throat or tongue. In the following year he was again married, this time to Charlotte, daughter of James Deacon Hume, Secretary of the Board of Trade. They had two children, a boy and girl. Unfortunately, Charlotte died of

the dreaded puerperal fever twelve days after the birth of their daughter, and regrettably, he lost this baby girl when she was only six months old. Although apparently in perfect health, she died within three days of developing a sudden illness. Torn with grief and anguish he took up lodgings in Southampton where he devoted himself to linguistic and religious studies. Finally, the compassionate doctor retired to a cottage on Wimbledon Common where he devoted himself unselfishly to the health and welfare of his poor neighbours. He died on 3 December 1938 when he was but fifty-two years of age.

HIS PAEDIATRIC PAPER

His paper on paediatric cerebral disease was read on 6 December 1819, before the Association of the College of Physicians of Ireland. The paper was subsequently published in the third volume of the Transactions of that learned institution. In August of the same year a short communication on the same subject, which he had sent to Dr Uwins of London, appeared in the London Medical Repository. By 1821 Nicholl had made some additions to his Irish paper and, in that year, he published in London a revised and expanded version under the title Practical remarks on disordered states of the cerebral structures occurring in infants. It is this last-mentioned treatise which forms the basis of my present paper.

It is of more than passing interest that Whitlock Nicholl was a Member of the Royal Irish Academy, 'a body which in many ways [was] the Irish counterpart of the Royal Society, but which includ[ed] polite literature and antiquities as well as science in its scope.'² The old R.I.A. house was situated in Grafton Street, Dublin.³ It was on such famous names as Sir Fielding Ould, John Cheyne, Abraham Colles and Robert Adams, founders of the Irish School, that this fair city has built up its reputation as a centre of excellence.

HIS SCHOLARSHIP

Before attempting to discuss Whitlock Nicholl's text it is important to emphasise his lifelong interest in languages. From the age of three until twelve he had been brought up by his uncle and aunt, the Rev. John Nicholl and his wife who had no children of their own. In the hands of Mrs Nicholl

he quickly learnt the rudiments of French. This introduction was followed by further tuition from a Frenchman who had emigrated to this country. Both foster-parents played a large part in Whitlock's general education which in an eighteenth century parsonage under a scholarly uncle was certainly not lacking in the Classics. In later life Whitlock published a work entitled Nugae Hebraicae or an inquiry into the elementary principles of the Hebrew language [London, 1825]. In fact, he did research on the etymology of language in general. He also advised Michael Faraday in finding scientific terms to describe the latter's new electrical concepts and discoveries. Electrical science owes Nicholl a debt for his efforts in this respect.

It is not surprising, therefore, that in his Practical Remarks . . ., Whitlock quotes Latin references from Ballonius or Baillou, Sennert, Boerhaave, van Swieten, Thomas Willis, Gaubius or Gaub, and Herberden [jnr]. Baillou wrote on whooping cough [1578]; Sennert published De febribus, Leyden [1627]; Gaub carried over the Hallerian doctrine of irritability into pathology in his Institutiones pathologiae medicinalis, Leyden [1758]; and Heberden [jnr] published a Latin Epitome of paediatrics [1804] which was translated into English in the following year. Of French authors Nicholl refers in his text to Antoine Portal [1742 - 1832] who produced a seven-volume history of anatomy and surgery [1770 - 73]. From the foot-notes in Practical remarks . . . we observe that Hippocrates, Galen and Celsus do not escape Nicholl's notice. This completes the list of foreign language sources from which Nicholl was able to draw in his studies on the disordered states of the cerebral structures in children - such was the scholarship of the man.

PRACTICAL REMARKS . . .

In the opening of Practical Remarks . . . Nicholl stresses 'that the consequences of a diseased state are [frequently] confounded with the cause from which they arise, and that such consequences are considered as constituting disease, while that cause, or, in other words, the real disease, is entirely overlooked'. According to him this error is particularly applicable in disease of the central nervous system, especially in infancy. Taking infantile convulsions as his example, he finds this term spoken of and treated as a form of disease, while the underlying irritated condition

of the brain, the cause of the irregular muscular movements, is disregarded.

HYDRENCEPHALUS

Nicholl cites hydrencephalus, or hydrocephalus as we call the condition, as another example of this type of loose thinking where a major sign of a disease is spuriously used as the name for that disease. Like Linnaeus, Sauvages and Cullen before him he displayed an interest in nosology, that is to say, in a scientific classification of diseases with rational nomenclature. Today the term hydrocephalus is restricted to those conditions that alter the normal relationships of pressure and volume movement within the interconnected compartments of the cerebrospinal fluid so as to cause an enlargement of the ventricles with progressive cranial distension in the heads of the young, but with prominent mechanical brain disturbances and alterations of cerebral circulation in older children.⁴ Any modern text book of paediatric neurology reveals hydrocephalus as having an extensive differential diagnosis requiring modern techniques and appliances to elucidate the specific aetiology in each case.

Nicholl criticised those medical writers who referred to hydrocephalus as a generic term covering a varied aetiology especially when these causes were sometimes known. He felt that such writers were concerned primarily with the effusion of the watery fluid into the ventricles alone, rather than making an effort to assign causes for such an excess effusion. Such an attitude he believed would inevitably throw an obscurity over the presenting symptoms in different diseases of the central nervous system.

Despite the observations of Whytt and Cheyne the aetiology of hydrocephalus was little understood when Nicholl wrote his paper. The pathways and portals of circulation of the cerebrospinal fluid, from its origin in the choroid plexus, through the four ventricles into the subarachnoid spaces and the cisternae via the foramina of Magendie and Luschka, to its evacuation by the venous sinuses and the brain had not been worked out.⁵ Magendie's problem of the origin and locus of the fluid bathing the central nervous system, or what Cushing called 'The Third Circulation' was not completely solved until 1923.⁶ Magendie regarded the fluid as a secretion of the pia mater and envisaged its movement

as a Galenic ebb and flow about the intracranial spaces.⁷

In his description of hydrocephalus Nicholl refers to the writings of many prominent British clinicians. Apart from Whytt and Cheyene, he cites Carmichael Smith, Quin, Rush, Yeats, Armstrong, Thomson and Cooke. George Armstrong (1720 - 89), the author of a book on children's diseases (with an enlarged 3rd ed. in 1777) is regarded as the founder of modern paediatrics. Michael Underwood, surprisingly not mentioned by Nicholl, also wrote a paediatric guide entitled A treatise on the diseases of children which was first published in 1784, passed through at least seventeen editions and remained a standard work for sixty years. This classic contains an account of a disease called watery-head which was a contemporary name for hydrocephalus.⁸

ERETHISM

The next subject Nicholl examines is that condition of the brain which he calls erethism, a term fast becoming obsolescent. Erethism means a state of excitement or irritation, an excessively irritated state either of the whole system or a particular organ or tissue. According to Quain,⁹ the word has been especially applied to the condition of the body in the early stages of acute diseases, and also to that induced by the too free use of mercury. Mercury poisoning gives rise to many serious effects on the nervous system, notably insomnia, headache, tremor, depression, and, the well-known condition of intense irritability or erethism.

Nicholl devotes a large portion of his paper to the subject of erethism. He proceeds to describe the term sensitive erethism in its perfect form when the brain is not inflamed or engorged with blood. The child is wakeful, scarcely ever sleeping, is attentive to every sound and to every object in sight, its temper is irritable and its retina very sensitive to light. The pupils are usually contracted but not invariably so. The limbs are much in action, the head is often moved about or shaken from side to side. The subject cries without any apparent cause. He states that there may be a degree of animation much beyond what is commonly met with in children of the same age. He argues that although a morbid condition of the cranial brain be present, the child may be considered healthy, on account of its being wakeful and lively. Most parents have come across episodes of this

kind in their own children and soothed them through the long nights and days back into tranquility without ever arriving at a firm diagnosis.

Expanding his discussion on erethism he then talks of torpid erethism of the cranial brain in which there is a great want of animation, the child being dull, yet fretful when roused or touched. Moreover, he states that the sensitive or torpid erethismal state can also occur in the spinal brain sometimes independently of and sometimes concurrently with that of the cranial brain. He quotes a remark made by Hippocrates that children from birth to the seventh year, who have acute fever with constipated bowels, who are wakeful and are easily terrified, who scream and who change colour, are very liable to be attacked with convulsions. Galen commenting on this remark observes that convulsions are so very readily induced at an early age, that want of sleep alone will bring them on [Hippocrates Prognost. 34 cum Galeni Comment]. Here is an example of a condition arising out of excessive irritation of the brain.

TRISMUS INFANTUM

Nicholl concurred with Parry that the spasm of the lower jaw accompanying tetanus arose from excessive irritation of the brain or spinal cord. Referring to trismus infantum [lockjaw] in a foot-note, Nicholl states that this condition was said to be common in Cayenne, Minorca, and hot countries and in those parts of Europe where the rooms are heated by German stoves, and the children oppressed by swaddling clothes. The strongest and most healthy infants were chiefly the victims of that affection which came on from the second to the seventh day after birth, rarely later than the ninth day - occurring about the time of the separation of the navel-string. In the island Heimaey, the only one of the Westmann-Eyar cluster on the southern coast of Iceland which is inhabited, almost every child that was born was carried off by tetanus, which rarely occurred on the mainland. This disease comes on very soon after birth, producing strabismus, rolling of the eyes, subsultus tendinum, with contraction and stiffness of the muscles of the back, and was called by the Icelanders, Ginklofe. When the disease had continued from one to seven days after birth, trismus generally appeared and sometimes opisthotonus which, strictly speaking, was the Ginklofe and, in some cases, emprosthotonus which they called Klums [Dr Holland in

A CASE HISTORY

I should now like to acquaint you with a case history by Whitlock Nicholl recorded from his own experience in Practical remarks . . . Here he has focused full attention on the patient, rather than on scientific theories of disease - an art advocated by Hippocrates and revived by Sydenham and Boerhaave.¹⁰ I now quote Whitlock's words almost in their entirety:

'The infant daughter of a very respectable surgeon, was observed to be, from her birth, lively and wakeful, scarcely ever sleeping during the day; she was highly sensible to impressions. She was suckled by her mother, a very healthy young woman. Nothing amiss had ever been noticed in the stools. When she was six weeks old, she awoke as with a hesitation of breathing, and the muscles of the face were convulsed. She became still more restless and she was very fretful. Her father gave her a dose of calomel and put her in a warm bath; the stool, following the exhibition of calomel, was perfectly healthy. After this I saw the child. She started when the door was opened, or when a chair was moved hastily, or when any one coughed, or if any part of her body was touched. She cried very much and loudly, and she was appeased, and momentarily, only by being placed in a sitting posture, by being carried about, or by being put to the breast. The pupils were of a natural size; there was no vomiting; no heat of skin; no heat of the head; no flushings of the cheeks; no increased throbbings of the arteries of the head and neck. When this highly sensitive and wakeful state had continued for several hours, the child became gradually more heedless of noise, until, at length, she ceased to notice them; the crying then subsided, and the child bore a horizontal posture. During this state, the eye appeared to be insensible to the light of a candle; the pupil, which was

rather enlarged, vibrating as it were between contraction and dilatation when strong light was thrown upon the eye; the forearm was bent to the arm; the fingers clenched; the thumb laid flat across the palm; the upper extremities, in this state, raised, and in constant motion; the head sometimes moved about, but not in a great degree; the lower extremities sometimes drawn up suddenly; the lips moving; no moaning; occasional rolling of the eyes; the eyes full open; there was not a moment during which some muscles were not quick in action; the body was bent backwards. When this state had continued for four or five hours, sleep came on, out of which the child awoke, appearing in its usual state. Then came on the fretful, crying, restless state; then the torpid restless state, during which the muscles were in constant action, the forearm bent, the fingers clenched as before; then sleep; after which, apparent recovery. And thus, the sensitive erithismal state, followed by torpid erethism, which gave place to sleep, to which apparent recovery succeeded, repeatedly ran its course. The cranial brain, after it highly sensitive state had been long kept up, gradually assuming a state approaching more and more to torpor, until its actions were at rest, and then sleep was present; but, after a short rest, the brain awoke to its original state. It was remarked, that, when the sensitive state of the brain recurred, the bowels were relaxed, notwithstanding the use of opium; the eyes were suffused; the child sneezed, and it had increased moisture in the nostrils, and an increased flow of saliva from the mouth; but when the sensitive state declined, the bowels were no longer relaxed; the coryza disappeared; the secretion having been increased by the erithismal state. At one period, during the torpid erithismal state, there was complete opisthotonus, to a great extent, so that the spinal brain was also affected with the erithismal condition. In one instance, during this child's

indisposition, the fretful and sensitive state, and the more torpid state, occupied two nights and the intervening day, during the whole of which time there was scarcely any sleep, none for a longer period than a few minutes; then came on sleep which lasted several hours. This state of things continued about a fortnight, the train of symptoms being repeated every day or every two days; after which time, the child continued without any marked symptom of disease, there being, however, still, an absence of sleep in the day; this condition lasted several weeks, the wakefulness gradually declining, until the child became perfectly healthy and it has continued so ever since. It is at this time, May 1821, sixteen months old.'

Here is a case of a healthy six weeks old child who was breast-fed by a healthy young mother. The child was acutely ill for a fortnight and then made a slow but complete recovery. The illness commenced when the child woke up with a hesitation of breathing and the muscles of the face were convulsed. The symptoms started when the door was opened or when a chair was moved hastily or when any one coughed. She cried a great deal and very loudly. There was no obvious pyrexia, no abnormality of the pupils, no rash and no vomiting. After the highly sensitive and wakeful state the child became torpid and went into a state of what I had thought to be classical tetany. In addition, the body was bent backwards. When this state had continued for about 4 - 5 hours, sleep ensued. This alternation of excitability followed by torpidity occurred again and again during the whole of the first fortnight. Nicholl stresses that during one of the torpid phases there was complete opisthotonus. In one instance during the child's indisposition the child was virtually sleepless for two consecutive nights together with the intervening day.

What was the diagnosis in this obscure disease? For me, the two outstanding features were the tetany and the opisthotonus. Delegates at the Conference were not wholly satisfied that the child had tetany because Nicholl's description of the hands in an attack did not truly correspond with 'main d'accoucheur' where the thumb is held straight with its tip touching the palmar aspects of the

index and middle fingers. I bow to the weight of experience represented at our Welsh Symposium, and I have deleted from my mind any thoughts that the child was suffering from spasmophilia. I hope I shall be forgiven for my clinical indiscretion. What of the opisthotonus? I cannot persuade myself that the child was suffering from tetanus, hydrophobia, maple syrup urine disease¹¹ or nux vomica poisoning. It is quite possible that the surgeon's daughter was suffering from a form of meningitis from which she completely recovered.

CONCLUSION

In my paper I have attempted a bird's eye view of Nicholl's monograph on cerebrospinal disorders in the young. Some of his ideas on pathology and the style in which those ideas were expressed are a little strange when analysed by a modern reader. Nevertheless, his essay is important because it not only sums up his own knowledge of a difficult subject, but adequately reviews the relevant literature available to him and, at the same, reveals rich sources which we might otherwise have found arduous to locate. His was a pioneer paediatric paper worthy of the man and the theme.

REFERENCES

1. Thomas, P.H. 'Dr Whitlock Nicholl', Glamorgan Historian Vol. 2, Cowbridge: Brown and Sons, 1965, 159-73.
2. Wilson, T.G. Victorian Doctor, 2nd Edn, London: Methuen, 1942, 74.
3. ibid., 79.
4. Etheridge Jr., J.E. 'Birth defects and developmental disorders' in Farmer T.W. (ed.) Pediatric Neurology, 3rd Edn, Philadelphia: Harper and Row, 1983, 81.
5. Garrison, F.H. An Introduction to the History of Medicine, 4th Edn, Philadelphia: Saunders, 1929, 682.
6. ibid., 683.
7. ibid., 466.
8. Underwood, M. A Treatise on the Disorders of Childhood and Management of Infants from the Birth [3 Vols], 2nd Edn, London: Callow, 1805, I, 221-31.
9. Quain, R. (ed.) A Dictionary of Medicine [2 Vols], London: Longmans, 1883, 457.
10. Guthrie, D. A History of Medicine, London: Nelson, 1946, 60.
11. French's Index of Differential Diagnosis, Bristol: Wright, 1979, 529.

THE EARLY HISTORY OF PSYCHIATRIC CARE OF CHILDREN

Sydney Brandon

Surprisingly little has been written on the history of the care of mentally abnormal children.¹⁻⁴ There are some early legends touching on the care of disordered children, such as that of the 4th century Bishop of Myra, St Nicholas Thaumaturgos (the Wonder Worker), who was 'protector of the feeble minded'. Since he was also the patron saint of children, of sailors and of pawnbrokers, as well as the model for Santa Claus, he was fully occupied.

Eupraxia, after the death of her husband Antigonas, a senator of Constantinople and relative of Emperor Theodosius, was said to have moved her estates to Egypt where she adopted the austere ways of life of a nun, and cared for the homeless and handicapped.

The 'fous' or 'bouffons' of France or 'Hofnarren' in the German speaking world were the jesters of the courts and many must have been mentally handicapped or otherwise disturbed. In some societies mentally disordered children were regarded as changelings or as being possessed of the devil, in others they were blessed as the 'infants of the good god' or the 'clowns of god' and allowed to roam unmolested.

THE SIXTEENTH AND SEVENTEENTH CENTURIES

During the 'enlightenment' defective children were commonly regarded as victims of demonism.

In the 16th century Martin Luther in his Table Talks reports:

'Eight years ago there was one at Dessau whom I, Martinus Luther, saw and grappled with. He was twelve years old, had the use of his eyes and all his senses, so that one might think that he was a normal child. But he did nothing but gorge himself as much as four peasants or threshers. He ate, defecated and drooled and, if anyone tackled him, he screamed. If things did not go well he wept. So I said to the Prince of Anhalt: "If I were the Prince I should take this child to the Moldau River which flows near Dessau and drown him". But the Prince of Anhalt and the Prince of Saxony, who happened to be present, refused to follow my advice. Thereupon I said, "Well, then the Christians shall order the Lord's Prayer to be said in church and pray that the dear Lord take the Devil away". This was done daily in Dessau and the changeling died in the following year. When Luther was asked why he had made such a recommendation, he replied that he was firmly of the opinion that such changelings were merely of flesh, a massa carnis, with no soul. 'For it is in the Devil's power that he corrupts people who have reasons and souls when he possesses them. The Devil sits in such changelings where their soul should have been.' ⁵

Thomas Phaer's Boke of Chyldren,⁶ probably the first book on paediatrics written in English, was published in the mid 16th century, and contains advice on 'Terrible Dreames' the 'Falling Euyll', insomnia charmingly described as 'Watchyng out of Measure' and bed wetting or 'Debilitie of Vertue Retentive of the reines'.

Children were involved in epidemics of mass hysteria such as the children's crusades, or in smaller incidents in closed communities such as that described by Johann Weyer⁷ in the Foundling Hospital in Amsterdam in 1560.

Daniel Defoe,⁸ in 1697, distinguished between madmen and idiots on the basis of whether they had lost reason or been born without it. At a time when there was no real provision for the care of the insane he campaigned against private mad houses and demanded a 'Fool House' to be supported by the better endowed through a tax on learning.

During most of the 17th century, the dominant attitude towards children was sternly authoritarian, and often tinged

with frank cruelty. Richard Allstree⁹ wrote in 1658, 'The new born babe is full of stains and pollutions of sin which it inherits from our first parents through our loins'. It was expected that restraints and flogging could drive out the devils and secure control.

In the English speaking world children were constrained from birth. They spent up to a year tightly bound in swaddling clothes, and when they were released they had little freedom other than to obey their elders. Parental discipline was harsh, and in the nursery, school, or workplace, other adult caretakers were equally ferocious. Children were frequently beaten, often on the whim of their elders. Lloyd de Mause¹⁰ examined over two hundred counsels of advice on child rearing prior to 1700, and only three - Plutarch, Palmieri and Sadoletto, failed to recommend that fathers beat their children. He also observed, 'the earliest lives I have found of children who may not have been beaten' were after 1690.

The late 17th century saw the emergence of changing attitudes towards children, reflected in Locke's Some Thoughts Concerning Education (1693) and John Aubrey's view that 'A Schoole should be indeed the house of play and pleasure'.¹¹

MENTAL DEFICIENCY OR INSANITY?

There is little evidence of interest in mental disorders of children in the 17th and 18th century literature, and before the mid 19th century little evidence of any systematic attempt to distinguish mental handicap or deficiency in the sense of amentia, from mental disorder or behavioural disturbance.

We must therefore look to the history of mental retardation for clues to the history of child psychiatry.

Occasional references are found to the admission of 'insane' children to adult madhouses or asylums, but until the 19th century, there are no references to special institutions for children, or any account of their special needs.

Several authors suggest that mental illness cannot occur before puberty.

In 1812, Benjamin Rush¹² asserted that the rarity of madness before puberty was because children's minds were too unstable for mental impressions to produce more than transient effects. Another, earlier author, asserted that 'Insanity cannot occur before puberty . . .' [since the mental faculties are not developed]. Cabanis, and others, assumed that the presence or influence of the seminal secretions was necessary before the brain and nervous system was susceptible of insane excitement. Yet others asserted that where any prepubertal disturbance did occur, the inevitable result was idiocy [mental deficiency].

Henry Knight, in 1872, describes psychiatric disorder in children of normal intellect and says 'We have been taught that insanity does not occur in early childhood, and that any mental perversion or obliquity tended directly and alone towards idiocy. I question the correctness of the statement that the insanity of the savage and that of children, is necessarily idiocy'.¹³

An extraordinary case, which defies classification, was described in 1790 by Johann Greding,¹⁴ of a child born raving mad who, when four days old, required four women to hold him down. He tore everything near him, climbed on tables and benches, had fits of uncontrollable laughter and generally caused mayhem all about him.

Haslam,¹⁵ in his Observations on Madness described three cases of insane children seen at Bethlem hospital between 1799 and 1805. A small girl of three was normal until inoculation for smallpox, she then developed a fever, her mental state was profoundly changed, she became doubly incontinent and 'forgot her former acquisitions, became violent, voracious and indiscriminating in her appetite'.

Presumably this was a case of post vaccinia encephalitis, for though 'by great attention and perseverance on the part of the nurse' her incontinence was cured, her intellectual progress remained arrested.

The second case was a subnormal boy of ten admitted because of a temporary behaviour disturbance.

The third case, another boy of ten, had been mischievous and uncontrollable since the age of two. He was violent, cruel, destructive and incapable of forming a friendship and inaccessible to any kindness shown him. Haslam was defeated

by this 'unrelenting foe of all china, glass and crockery and discharged him after a few weeks'.

THE WILD BOY OF AVEYRON

Jean Marc Gaspard Itard¹⁶⁻¹⁷ is remembered for his association with the Savage (or Wild Boy) of Aveyron. Itard, born in Provence in 1774, was destined for business, but became an assistant surgeon in a military hospital in order to avoid conscription into the army. He became fascinated by the work, qualified, and became a physician of distinction.

His appointment to the Institution for the Deaf Mutes in Paris led him to develop an interest in the training of the inmates, as well as in the scientific study of the organs of hearing and speech. His treatise on disease of the ear published in 1821 laid the foundations of modern otology.

When Itard was aged about twenty five, a boy of eleven or twelve years of age was brought to the institution by the Abbé Sicard Bonnaterre, Professor of Natural History at the Central School of the Department of Aveyron.

The boy had been seen roaming naked through the woods of Caunes, and having twice been caught and twice escaped, he was brought, in 1799, to the Hospice St Afrique, and then turned over to Bonnaterre, who interested Itard in him because of his inability to communicate.

Phillipe Pinel decided after examination that the boy was 'an incurable idiot, inferior to domestic animals'. Itard, influenced by Condillac's theory that all knowledge was acquired through the senses, could not accept Pinel's prognosis. Condillac compared the human being to a marble statue who acquired first the sense of smell, and later the other senses in order, and through the use of his senses alone, to build up his intellectual faculties and his knowledge of the world. So Itard argued that the boy was mentally arrested because of his social and educational neglect, and undertook to transform the boy 'from savagery to civilisation, from natural life to social life'.

Itard laboured for five years, but when the boy 'broke out in a wild storm of passion', attributed to the onset of puberty, his mentor abandoned his efforts, and the boy lived

in custodial care until his death in 1828.

Despite this failure to achieve the predicted transformation, the French Academy of Science honoured Itard in recognition of his achievement. Considerable improvement in behaviour had occurred, the boy could recognise objects, identify letters of the alphabet, comprehend many words and name some objects.

Itard had, despite his failure, demonstrated the potential reversibility of the state of idiocy, and the need for individualised education or training. Philosophers and educationalists were excited by the case, and a vigorous debate on the origins and treatability of idiocy ensued.

THE FRENCH INSTITUTIONS

Felix Voisin,¹⁸ in Paris in the 1830's, was ahead of his time. He concerned himself with four categories of children with special needs. First the feeble minded - those intermediate between idiocy and normality. Second, those born normal, but who had taken a vicious turn through faulty education. Third, those showing character anomalies from birth, such as inordinate pride, uncontrolled passions, and evil propensities, and finally those born of insane parents, and therefore predisposed to mental disorder. For each group specific 'orthophrenic' treatment was required. He founded a private Orthophrenic Institution where he 'struggled' with his pupils' innate dispositions, altered their constitutions and saved them from the fate which had excluded them from social harmony.

Sadly, the institution was closed because of lack of support, and he was appointed physician to the Bicêtre. In this capacity he recruited as instructor, Édouard Séguin.

Itard had passed his notes on the boy of Aveyron to his pupil Édouard Oresmus Séguin,¹⁷ with encouragement to devote himself to the investigation and treatment of idiocy. Séguin was also influenced by the Christian School of Saint Simonism, which was 'striving for a social application of the principles of the gospel, for the most rapid evaluation of the lowest and poorest by all means and institutions, mostly by free education'.

Just as his mentor turned to Phillipe Pinel, Séguin sought

guidance from Pinel's pupil and successor, Jean Étienne Esquirol, who declared categorically that educational efforts were useless because 'no means are known by which a larger amount of reason or intelligence can be bestowed upon the unhappy idiot, even for the briefest period'.

Despite this advice, in 1837, Séguin, then twenty five years old, attempted to educate an idiot boy. After eighteen months of arduous labour his pupil 'was able to make better use of his senses, could remember and compare, speak, write and count'. Esquirol, in 1839, magnanimously recognised Séguin's achievement, but reserved his concession by referring to the patient as 'un enfant . . . semblable à un idiot'.

At the Hospice des Incurables and at the Bicêtre, Séguin began to treat more children, and in October 1842 a commission was appointed to report on his work, and eventually endorsed his methods and supported his further work. A further commission in 1843 reported, 'Monsieur Séguin has thus opened up a new career of beneficence. He has given to hygiene, to medicine, to ethics an example worthy of being followed. We, therefore, have the honour of suggesting that a note of thanks be written to Monsieur Séguin for the communication which he has addressed to this Council and that he be encouraged in his charitable enterprise'.

Another commission, appointed in 1844 by the Paris Academy of Sciences, declared that Séguin had definitely solved the problem of idiot education.

In 1845 he published his classic textbook, Traitement moral, hygiène et éducation des idiots et des autres enfants arriérés [Paris: Baillière, 1846]. His work became internationally known and there was a constant stream of visitors to his clinic. Following the political unrest of 1848, Séguin emigrated to the United States, and settled in Ohio as a general practitioner. He was briefly head of the Pennsylvania Training School for Idiots, and he settled in Mount Vernon, New York.

In 1876, he became the first president of the Association of Medical Officers of American Institutions for Idiotic and Feeble Minded Persons.

His other major contributions were to the field of clinical thermometry, and in addition to designing a widely used thermometer he wrote for both professional and lay audiences on the subject.¹⁹

CRETINISM IN SWITZERLAND

Johann Jacob Guggenbühl⁵ was born in 1816, at Mecten, on Lake Zürich. His teacher, Troxler, was a distinguished physician and philosopher, who aroused his young pupil's interest in cretinism as a form of endemic human degeneration.

At the age of 20, when passing through the village of Seedorf, he was deeply moved by the sight of a 'dwarfed crippled cretin of stupid appearance' mumbling the Lord's Prayer before a wayside cross. He followed the man to a nearby hovel where his mother explained that the cripple had learnt the prayer without much difficulty in his childhood, and ever since had prayed in the same place at the same time each day, regardless of weather. Because of extreme poverty the mother had been unable to provide further education, and had seen him deteriorate year by year.

The young physician wondered what might be achieved by early consistent and intensive training. He could not accept the idea that idiot children were totally inaccessible to any intervention.

Reviewing the literature he found no reference to any possible remedy. He then decided to devote his life to the 'care and prophylaxis' of cretinism, and undertook many trips to affected areas to learn what he could about the 'condition, incidence and causes of cretinism'.

He settled initially in general practice but, encouraged by an educationalist, and supported by a wealthy forester, he set up the first residential institution for the mentally handicapped, though confining his interest to cretins. It had been observed that cretinism flourished in the valleys but was unknown in the mountains. The benevolent forester was also keen on the colonisation of the higher regions with plant life and eager to draw the parallel, so he put at Guggenbühl's disposal 40 acres on the Abendberg 4000 feet above sea level and only 100 feet below the summit.

This site near Interlaken, Berne, became dotted with cottages, and had central buildings providing an assembly hall, recreation and bathing facilities, with a separate building for holding training courses for attendants and teachers.

He advocated fresh air, bodily care and a good diet, tried a variety of treatments including calcium, copper and zinc, but unfortunately not iodine preparations. His methods also emphasised the need to develop sensory perceptions. Although his work was confined to cretins, his methods were rapidly accepted as applicable to all mentally handicapped children, and the Abendberg became a centre of world pilgrimage.

Unfortunately as his fame spread, Guggenbühl spent more and more time lecturing on his achievements, advising Kings and Governments, and increasingly neglecting his charges. Suspicion mounted, he was accused of neglect, of admitting normal children then claiming that they were cured cretins, and eventually, of embezzlement. His final downfall followed the unexpected visit of the British minister who decided to visit a few English patients on the Abendberg. He reported the children in a most neglected condition and the institution in disgusting disorder. The director had been travelling abroad for up to six months and had made no arrangements for alternative medical cover.

In 1858 the Swiss Government ordered an enquiry which established that, at most, one third of the inmates were cretins, and no single cretin had ever been cured on the Abendberg. It was recognised that Guggenbühl was initially inspired by altruistic motives but had been corrupted by vanity and self deception.

Like Itard before him Guggenbühl inspired an optimistic philosophy of intervention. Both had failed to achieve their objectives, but Itard established an interest in the education and training of idiots, and Guggenbühl encouraged the setting up of residential establishments in which this could be done. His efforts were directly instrumental in inaugurating the institutional care of retarded children in Europe, and inspiring Samuel Gridley Howe to colonise in the United States.

THE CAUSES OF IDIOCY

In 1848 Howe presented a report to the Commonwealth of Massachusetts on the condition of its idiots.²⁰ On the basis of this, an experimental school for ten selected idiots was set up, to demonstrate what could be achieved by the application of scientific teaching. This became the Massachusetts School for Idiotic and Feeble-minded Youth, with 230 'pupils', and the first institution of its kind in the United States. New York followed in 1851, Pennsylvania in 1853 and Ohio [with 824 places] in 1857. In 1876 the Association of Superintendents of Institutions for Idiots and Feeble-minded Persons was established and by 1888 there were fifteen institutions in the United States.

In 1847²¹ a group of pedagogically minded philanthropists in England, aided by John Connolly, opened the first home for idiots in London, one hundred and fifty years after Defoe's campaign. A few years later, in 1855, the Asylum for Idiots at Earlswood had opened, and Connolly volunteered his services for the first few years.

In Dr Howe's original report, printed in part ten years later as On the Causes of Idiocy, he recognised three groups or divisions, idiots, fools and simpletons, largely corresponding to the later terms idiots, imbeciles and morons.

Thus, throughout the nineteenth century, there was a gradual differentiation of idiocy from other disorders of childhood and a gradual provision of residential accommodation for their education and training. These developments were associated with considerable therapeutic optimism.

EDUCATIONAL PSYCHOLOGY

The growth, in the 18th and 19th century, of concern with the rights of the individual, was reflected in attitudes to children, and particularly to their education. School attendance was made compulsory by the Education Act of 1876, and it soon became clear that many children could not reach the minimum standards required by the Board of Education, thus focusing attention on efforts to identify 'the potentially imbecile, criminal or insane'.

The first psychological laboratory in the United States was opened at John Hopkins in 1883 by G. Stanley Hall. He started the paedocentric education movement in 1891, established the Pedagogical Seminary [now the Journal of Genetic Psychology] and in 1894, the Illinois Society of Child Study, forerunner of the American Society for Child Study. One of his students, H. H. Goddard, at the Vineland Training School for Mental Defectives in New Jersey, made major contributions to the development of mental testing.

In England, Spencer, Bain, Galton and Sully were laying the foundations of educational psychology. Francis Galton was a particular advocate of the study of the individual child and of the significance of individual differences. In 1884 he set up his anthropometric laboratory, which was later established at University College.

James Sully was appointed, in 1893, to the chair of Mind and Logic at University College, London, and in 1886, with Mitchel, opened the first exclusively psychological laboratory in this country. McDougall was director of the laboratory from 1899 to 1907, when he resigned in favour of Spearman who had recently returned from work in Wundts laboratory in Leipzig.

In the year of his appointment to the chair, Sully, and a group of teachers, school inspectors and administrators, established the British Child Study Association. Three years later, a group of medical men established the Society for the Promotion of Hygiene in School Life - later renamed the Childhood Society. Galton was its first chairman, and the members included Frances Warner, Dr Shuttleworth and Dr Langdon Down. When Sully was invited to join he declined.²²

Although Sully viewed psychology as a branch of biology, he laid considerable emphasis upon 'the sociological factor', and the gulf between educationalists, including the early educational psychologists, and many of the earlier medical workers, was to a considerable extent, related to the latter's commitment to the 'physiological conception' or biological model. Maudsley²³ viewed all mental disorders as brain disorders and most doctors were sceptical of psychologists because of their 'lay psychologic methods', such as the use of so-called mental tests, especially in the examination of mental defectives, and of the proposed adoption of 'psycho-analytic treatment'.

Under the Defective and Epileptic Children [Education] Act of 1899, such children, after medical examination, might be certified and committed to a special school. Sully and others were exceedingly critical of the power invested in doctors who were not pedagogically trained, and stated that 'Medical Science is more familiar with the rare but striking cases of mental disease and defect; mental science on the other hand, though it has learnt much from the suggestive analysis that may be drawn, has already shown that, during childhood at least, the vast majority of cases consist of deviations within the normal range rather than from the normal'.²²

Sully argued that the medical specialist was trained to deal solely with gross abnormality, and since the clinician dealt with the patient from the bedside, not in his everyday environment, a new psychological specialist was required. This exponent of mental science would have the 'gift of sympathetic insight' and 'specific psychological training'.²²

This distinction may well have caused some confusion, for on the establishment of the Medico-Psychological Association in 1865, the Asylum Journal had been renamed the Journal of Mental Science, and was unequivocally the professional journal of British psychiatrists.

In 1907, Cyril Burt, who had carried out studies on Oxford school children, under McDougall and Keatinge, was invited by Sherrington to accept a lectureship in psychology in his department of physiology. Sherrington, a distinguished neuro-physiologist, was vice-president of the Child Study Association, and committed to the concepts of mental mensuration.

In 1913, the Mental Deficiency Act made it incumbent upon Local Authorities to provide facilities for the mentally handicapped, and it was to Burt that the London County Council turned when they appointed a psychologist to the education authority, the first such appointment ever to a public body. Burt's annual reports were collected and published as substantial volumes, which were of great influence in the development of educational psychology. He remained in that post until he was appointed to the chair at University College, from which he continued to provide a child guidance service until 1939.

Despite the subsequent doubts cast upon his integrity as a research worker, Cyril Burt was a central figure in the development of child guidance in Great Britain.²⁴

In France, Binet²⁵ had been interested by the work of Ribot and Janet in the field of psychoneurosis. From about 1904 he was working on measures of native ability and published his first series of tests in 1905. The Minister of Public Instruction in France had requested him to study methods of dealing with backward children. In 1908 he published his second series of tests, arranged according to age levels of achievement. Terman attempted to modify and standardise these tests for American children, and produced the Stanford-Binet revision in 1916.

Towards the end of the century the early enthusiasts in the Association of Superintendents of Institutions for Idiots and Feeble Minded Persons were experiencing doubts.²⁶ Dr G.H. Knight, in 1895, whilst lauding the achievements of the Institutions, acknowledges 'our results are meagre from an intellectual standpoint', and went on to justify very large institutions as providing the best results, and giving 'employment to those adult imbeciles beyond what we call "school age"'.

In 1902, Dr Martin W. Barr wrote, '. . . Without formal expression emanating from our association as a body there is yet, I believe, a consensus that abandons the hope long cherished of a return of the imbecile to the world . . .'

By 1913, H.H. Goddard was reading to the Association a paper on 'The improbability of feeble-minded children'. Using the recently developed Binet scale, he demonstrated that in more than two thirds of a population subjected to three annual testings the '. . . variation is so slight that it must be considered accidental'.

This statement was a terrible shock to many members of the Association. Dr Walter E. Fernald, Howe's successor and leading light in the Association said 'I have been trying to reconcile Professor Goddard's statement with our definite methods of instruction. What Dr Goddard has just told us is the most significant, in a way, and the most discouraging statement that we have ever known. I am afraid it is true'.

The pendulum was on the swing, the age of optimism at an end. After a brief venture in eugenics the medical specialty of mental handicap never recovered its early enthusiasm.

THE DEVELOPMENT OF CHILD GUIDANCE AND CHILD PSYCHIATRY

Before the end of the 19th century children had been regarded as animula in corpusculo - a little soul lodged in a little body. Scant attention had been paid to specific problems of childhood and severely disturbed children unmanageable by the methods of control then available were rarely and in desperation admitted to asylums or more frequently were regarded as idiots and admitted to the residential accommodations developing for such individuals. In the years before the first world war all of the elements of modern child psychiatry had been established.

The first psychiatric social worker was appointed, mainly through the influence of Adolf Meyer, to the Manhattan State Hospital²⁷ in 1906. Healy, as a result of his work with delinquents from the Juvenile Court, opened the Chicago Juvenile Psychopathic Clinic in 1909, and was largely responsible for the establishment of the Judge Baker Foundation in Boston in 1915. Initially, Healy relied upon the cooperation of social agencies for details of the home backgrounds of his clients, but social workers were appointed to the Boston Psychopathic Hospital in 1912. In Baltimore, where special children's clinics had recently been opened, the Phipps Clinic appointed a social worker in 1913. The Chicago Institute and others followed suit.

The New York School of Social Work began mental hygiene courses in 1917 and in 1918 the Smith College of Social Work was established.

Thus the elements of the child guidance system were emerging, and were greatly facilitated by the Child Study Association of America, and the mental hygiene movement under the influence of Clifford Beers. The National Committee for Mental Hygiene was established in the U.S.A. in 1909.

The Studies of Hysteria by Breuer and Freud from 1895 onwards established the significance of childhood feelings and events. In 'Three Essays on Infantile Sexuality'

[1905],²⁸ Freud established the primacy of childhood experience, and through little Hans,²⁹ the possibility of treatment in childhood as a therapy and a prophylaxis against adult mental illness.

Despite the interest of McDougall, Rivers, Ernest Jones and T.A. Ross, British psychiatrists were extremely cautious of the new psychoanalysis. In the United States however, Stanley Hall invited Sigmund Freud to give a series of lectures [the Clark lectures], which exerted a profound influence upon the development of American psychiatry for the next fifty years.

Adolf Meyer incorporated much of the new doctrine into his own eclectic scheme, but his psychobiology remained distinct, and exerted more influence on British Psychiatry than Freud and the post-Freudians.

The increasing clarity of differentiation between congenital states, and delinquency or maladjustment arising in later childhood, enabled the new therapeutic movement of child guidance and child psychiatry to develop. Unfortunately, from the very beginning, the emerging professions of educational psychology, psychiatric social work and child psychiatry were divided in training and philosophy, and the seeds of the disorganised development of the later 20th century had been sown. The development also left behind the care of the mentally handicapped, for as optimism declined, and the prospects of 'cure' declined, doctors turned towards the more promising prospects of reforming delinquents, curing behaviour disorders and preventing mental disorder. There was little evidence but much hope that the treatment of emotional disorder could prevent later adult illness.

The problems of today are clearly rooted in this early history, and perhaps a better understanding of their origins will help us to resolve the problems which face child psychiatry to-day.

REFERENCES

1. Crutcher, R. 'Child psychiatry. A history of its development' Psychiatry 1943, 6, 191-201.
2. Howells, J.G. and Osborn, M.L. 'The history of child psychiatry in the United Kingdom' Acta Paedopsychiat. 1980/81, 46, 193-202.
3. Rubinstein, E.A. 'Childhood mental disease in America' Am. J. Orthopsychiat. 1948, 18, 314-21.
4. Walk, A. 'The pre history of child psychiatry' Brit. J. Psychiat. 1964, 110, 754-67.
5. Kanner, L. A History of the Care and Study of the Mentally Retarded, Springfield, Illinois: Charles C. Thomas, 1964.
6. Phaire, T. The Boke of Chyldren, Edinburgh: E & S Livingstone, 1955.
7. Weyer, J. 1560, quoted in Calmeil, L.F. De la Folie, Paris, 1845, 264.
8. Defoe, D. 1667, quoted in Doerner, K. Madmen and the Bourgeoisie, Oxford: Basil Blackwell, 1981, 31.
9. Allstree, R. The Whole Duty of Man, London: 1658.
10. de Mause, L. (ed.) The History of Childhood, New York: Souvenir Press, 1974.
11. Plumb, J.H. 'The New World of children in eighteenth century England' Past and Present 1975, 67, 64-95.
12. Rush, B. Medical Inquiries and Observations upon the Diseases of Mind, Philadelphia: Grigg, 1812.
13. Knight, H. 'Hallucinations of childhood' Proc. Connecticut Med. Soc. 23 May 1872, reprinted in Rosen, M., Clark, G.R., and Kivitz, M.S. (eds), The History of Mental Retardation, Collected Papers, Vol. 1, Baltimore: University Park Press, 1976.

14. Greding, J.E. 1790, 'Medical aphorisms on melancholy etc.' Translated in Crichton, A. An Enquiry into Mental Derangement, London, 1798, II, 355.
15. Haslam, J. Observations on Madness, London, 1809, 185-206.
16. Silberstein, R.M. and Irwin, H. 'Jean Marc Gaspard Itard and the Savage of Aveyron. An unsolved diagnostic problem in child psychiatry' J. Am. Acad. Child Psychiat. 1962, 1, 314-22.
17. Kanner, L. 'Itard, Seguin, Howe - three pioneers in the education of retarded children' Am. J. Ment. Deficiency 1960, 65, 1-10.
18. Voisin, F. Des Causes Morales et Psychiques des Maladies Mentales, Paris, 1826, quoted in Walk, A. 'The Pre-history of Child Psychiatry' Br. J. Psychiat. 1964, 110, 757.
19. Séguin, E.O. Medical Thermometry and Human Temperature, New York: W. Wood and Co., 1876.
20. Howe, S.G. On the Causes of Idiocy, Edinburgh: McLachlan and Stewart, 1958.
21. Doerner, K. Madmen and the Bourgeoisie, Oxford: Basil Blackwell, 1981, 90.
22. Keir, G. 'Symposium on psychologists and psychiatrists in the child guidance service. III, A history of child guidance' Brit. J. Educ. Psychol. 1952, 22, 5-29.
23. Maudsley, H. Physiology and Pathology of Mind, London, 1867.
24. Hearnshaw, L.S. Cyril Burt, Psychologist, London: Hodder and Stoughton, 1979.
25. Binet, A. 'La psychologie individuelle' Ann. Psych. 1896, III, 296-332.
26. Haskell, R.H. 'Mental deficiency over a hundred years' Am. J. Psychiat. 1975, 100, 107-18.

27. Meyer, A. 'Organisation of community facilities for the prevention care and treatment of nervous and mental diseases' Proc. First Int. Congr. Mental Hygiene 1932, 1, 237-57.
28. Freud, S. Three Contributions to the Theory of Sex, New York: Nerv. & Ment. Dis. Publishing Co., 1910.
29. Freud, S. Collected Papers, London: Hogarth Press, 1933, 3, 149-289.

THE EVOLUTION OF DEVELOPMENTAL MEDICINE

Sheila J. Wallace

To develop is to bring out what is latent or potential; to exploit the natural resources. The investigation of medical conditions in children always takes account of age and size, thus paediatrics can never be divorced from development. This concept is specifically emphasised in the term 'developmental medicine', a subject that embraces the study of childhood potential, the reasons why this potential might not be realised and the therapeutic measures which might exploit innate attributes. Developmental medicine has become in particular the study of the neurobehavioural progress of normal children and those disadvantaged by physical, mental or social circumstances.

DEVELOPMENTAL MEDICINE FROM THE GREEKS TO THE EIGHTEENTH CENTURY

Early Appreciation of Development as a Factor in Neurological Disorders: The Greeks.

Statements in the Hippocratic Writings, 430-330 B.C.¹ show that the importance of genetic input was recognised. The sacred disease, epilepsy, was noted to be hereditary and comments were made on the likelihood of the physical build of children being comparable to that of their parents. There was awareness that prenatal and perinatal events can be determinants of infantile outcome. Bleeding during pregnancy was known to be an indication of a compromised foetus and the birth of a sickly infant to large healthy parents was attributed to intrauterine causes, it being believed that some of the child's nutriment from the mother had escaped from the womb. The proposal that drugs may be

administered to pregnant women only between the fourth and seventh months of gestation suggests there may have been appreciation that both early and late in pregnancy the foetus might be more vulnerable to maternal drugs than in the middle trimester. However, since deformities occurring prenataally were believed to result either from external contusions with damage occurring to that part of the foetus underlying the blow received to the mother's abdominal wall, or from local constrictions to the womb, possible teratological effects of drugs do not appear to have been considered.

Differential rate of growth in males and females was reported, with the males being fully formed after thirty and the females after forty-two days. There was a concept of active life before birth in the report that the embryo starts to move once the extremities of the body have branched - i.e. at three months for males and four months for females. The male precocity was attributed to greater strength. Vigorous kicking of the foetus was considered the precipitating event for labour. Although it was recognised that there is an optimal gestation period with both pre- and post-term infants being at risk, it was noted that children born at seven months gestation could survive. The possibility that some neonatal reflexes might be present before birth is implied in the comment that 'if the child had not sucked in utero he would not know how to suckle the teats as he does directly he is born'.

Birth was recognised as a potentially hazardous process if the presentation was other than by vertex. '... but if it comes sideways or feet first the birth is difficult and often fatal, either to the mother or the child or both.'

Aristotle [384 - 322 B.C.] ² is credited by Still³ with early post-natal developmental observations. He recorded that babies after birth for the first forty days do not laugh or cry when awake. He believed that alterations in body proportions with growth determine the time when a child will walk upright.

Of the illnesses now considered in the context of developmental medicine only convulsions are recorded in the Hippocratic Writings.¹ Newborn infants were noted to suffer from aphthae, vomiting, cough, insomnia, nightmares, inflammation of the ears and of the umbilicus, so it appears that neonatal convulsions were either infrequent or

unrecognised. It is only when teething takes place that convulsions are mentioned. The observation that such attacks were most common during eruption of the canines puts the peak age for convulsions at just over twelve months, about the time still noted as that critical for the occurrence of febrile convulsions. The latter were further recognised to occur most commonly in children under the age of seven and to be unlikely events in older children and adults. Severe partial fits, leaving the child with residual pareses were considered to have a good prognosis so far as later epilepsy was concerned, while those partial fits which did not cause permanent damage were considered likely to recur as the child grew older, a clinical observation in keeping with the later demonstration that dead neurones cannot produce abnormal electrical activity.

A.D. : The First 1000 Years.

The likelihood that childhood epilepsy might be benign was further observed by Paulus Aegineta writing in the 7th century A.D.⁴ He felt that in view of the good prognosis no therapy was indicated. Paulus Aegineta also mentions another neurodevelopmental disorder, hydrocephalus, in his writings.

In a treatise on children written by Rhazes [850 - 932]⁵ of the Arabian school and printed in Latin in 1481 two of the twenty three chapters were on 'De magnitudine capitis puerorum' and 'De epilepsia puerorum'. This treatise also mentions 'mater puerorum', a condition which is thought by many scholars to signify convulsions rather than established epilepsy. The term appears to have been used by later writers in a manner synonymous with convulsions.

References to the two conditions convulsions and hydrocephalus are also found amongst the twenty six subjects in Canonis Medicinae written by Avicenna [Arabian school, c. 1000].⁶ Avicenna in Canticum de Medicina appears to have been aware of the importance to the infant of antenatal care and of postnatal experience and stimulation. He suggested that the infant should see the stars and the sky and be shown colours so that he gets accustomed to using his eyes and that he be spoken to in a loud voice so that he becomes used to speech. Behavioural training was also considered.

The Eleventh to the Fifteenth Centuries.

Little on childhood disorders, and, in particular of relevance to developmental medicine appears to have been published between 1000 and 1400 A.D. During the Middle Ages medical thought was dominated by philosophical approaches rather than observation and brain function was explained by the ventricular theory propounded by St Augustine (354 - 430).⁷ In this, mental faculties were believed to be located in the ventricles, with either the posterior ventricle responsible for motion and the middle for memory, or, the anterior chamber functioning as a seat of imagination and phantasy, the middle one being rational and the posterior one for memory. Thoughts were considered to progress from the anterior regions posteriorly following the flow of cerebrospinal fluid.⁸ It is not surprising that the difficult problem of childhood neurological progress was not considered in the context of this theory.

A number of books written specifically on childhood disorders appeared in the latter half of the fifteenth century.³ In Libellus de Egritudinibus Infantium written by Bagellardo in 1472 one of the twenty two chapters was entitled 'De epilepsia'.⁹ In 1473 Bartholomeus Metlinger¹⁰ produced Ein Regiment der Jungen Kinder which is thought to be the first book on childhood ailments to be published other than in a classical language. His repertoire of developmental disorders was rather larger than that of his predecessors and his book contains chapters on unnatural bigness of the head, epilepsy, squint and paralysis attacking children. He also mentioned that congenital smallness of the head has no remedy. Roelans¹¹ writing in 1483/1484 considered fifty two subjects under separate headings. These included: water collected in the head, wind or distension of the head with air, largeness of the head, epilepsy called infants disease, 'Children's Mother', relaxation of the nerves, spasm [convulsion]. With the exception of the section on the relaxation of the nerves, it is doubtful whether these seven subject headings contain more information than previous treatises confining themselves to the titles of epilepsy and hydrocephalus. It seems possible that relaxation of the nerves might be an early description of the floppy infant, though cerebral palsy or infantile paralysis might equally well have been so described.

The Sixteenth Century.

During the sixteenth century the most important advance in the documentation of childhood diseases was an increasing tendency to write in the vernacular or to translate from Latin into a living language. Childhood palsies began to appear as more regular chapters in publications. Pierre Tolet¹² produced Opusculum Recens Natum de Morbus Puerorum in 1538 and although Still³ considered this to be largely a reissue of Bagellardo's earlier work, an appendix includes a section on paralysis with wasting but not extreme emaciation, further suggesting the recognition at this time of the physical signs of either cerebral palsy or infantile muscular disease. Amongst thirty one chapters in The Byrth of Mankynde translated from Roesslin's Latin by Richard Jonas,¹³ 'Of the fallyng sycknesse', 'Of tremblyng of the bodye or of certayne membranes of the bodye, called the palsye', and 'Of google eyes or lokyng asquynt' appear.

The Boke of Children written by Thomas Phaer¹⁴ in 1545 was the first book on childhood disorders to be actually written in English. Thirty seven subjects were considered. These included: 'Aposteme of the brayne', 'Swellyng of the Heed', 'The fallynge Evill' and 'The Palseye'. Age was recognised as a factor in the prognosis of epilepsy, but in contrast to earlier writers Phaer believed that the outlook was worse up to the age of seven years than in younger children and one wonders whether his statements were the result of his own observations or a misunderstanding of previous data. An appreciation of the importance of pre- and perinatal events appears in the 1567 edition of Phaer's book:¹⁵ 'To begyn a treatyse on the cure of children it should seeme expedient that we should declare somewhat of ye generacion, they being in ye wombe, the time of procedyng, the maner of birth . . .'

Towards the end of the sixteenth century more comments on normal development appeared in the literature. Ferrarius¹⁶ designed a baby-walker referred to as a 'walking machine', a chair with a tray in front for toys and, in recognition of the normal instability of the toddler, a protective helmet so that head injuries might be avoided. Mercuriale¹⁷ noted that at two and a half years a child imitated speech like a parrot and retained for a long time what is learned in imitation. He commented that 'The eloquence of the Gracchi, the rhetoric of a Hortensius, had its origin in the clear speech of a mother or father'. Mercuriale states that in

his opinion convulsions that begin in the back take origin from the spinal medulla, which he noted as playing a very important part in maintaining life and that this part is always particularly feeble in children. It is not clear what he means by convulsions that begin in the back, but this might be interpreted as those in which opisthotonus is a feature. These would certainly be more serious than partial attacks. It is also possible that he is using the term convulsion in a wider sense than is usual and recognising the significance of attacks of opisthotonic posturing which might be associated with raised intracranial pressure, meningitis or strychnine poisoning.

The Seventeenth Century.

Throughout the seventeenth century books on children's diseases continued to include chapters on convulsions, and in some cases, hydrocephalus and paralysis.³ Zuccharus¹⁸ in 1604 is thought to have contributed little that was original in his Tractatus de Morbis Puerorum in which one of the twenty chapters was entitled De puerili convulsione epileptica. Convulsions, paralysis and hydrocephalus were described by Cascales¹⁹ in Liber de affectionibus puerorum . . . In addition to A Treatise of the Diseases of Children,²⁰ Pemell²¹ produced De morbis capitis, or Of the chief internall diseases of the head in 1650. The latter treatise on neurology dealt with headache, apoplexy, paralysis, convulsions, epilepsy, coma and lunacy and is an early example of how understanding of neurological disease in adulthood might have implications for neurodevelopmental disorders. Starsmore,²² writing in Children's Diseases, Both Outward and Inward, included sections on 'Of the palsy', 'Of the epilepsy or falling sicknesse' and 'Of convulsion'. In addition to hereditary predisposition to epilepsy, he was aware that the birth process might also be implicated and described 'the Nativity being in the Eclipse of the Moon' as a further adverse factor. In describing 'the Mediate Cause of an Epilepsie' he showed that he believed in the existence of a necessary precipitating event in predisposed individuals, and described 'a Vapour rising from the lower Parts of the Head' as being the final stimulus whether the associated illness is 'Fear, corrupted Milk in the Stomach, Worms, breeding of Teeth, the Small Pox, Meazles or Feavers'. Sylvius de le Boe's De morbis infantum et aliis quibusdam memoratu dignis affectibus,²³ which was translated into English by Gower [1682] is chiefly notable

for the description of a convulsion which occurred in his own daughter, aged eight months, and which continued for several hours, terminating in her death. In Pathologiae cerebri et nervosi generis specimen. In quo agitur de morbis convulsivis et de scorbuto, Thomas Willis²⁴ recognised that epilepsy can be either hereditary or acquired; either 'Primary or Sympathetick', thus he predated by three centuries present day classifications of seizure disorders. He reiterated the importance of age and commented that infantile fits either occurred within two months of birth or when the child was teething, thus recording the period between two months and about nine months when the brain is relatively refractory to fits. He observed that a cerebral cause for fits is often absent on post-mortem examination.

Since Thomas Sydenham²⁵ described 'Chorea Sancti Viti' as a 'sort of Convulsion' it appears that the term convulsion was used for involuntary movements other than those occasioned by seizure disorders. Sydenham commented on the age-related incidence of this type of chorea, noting that it 'invades Boys and Girls from ten years of Age to Puberty'.

Two seventeenth century authors gave attention to neonatal neurological and behavioural states. Nicholas Culpeper²⁴ in A Tractate of the Cure of Infants wrote a chapter on 'Of great Watching' which included the observation that 'A Child newborn sleeps more than he wakes, because . . . he used to sleep in the Womb'. Physical attributes of the neonate were observed in the section on the newborn in Traité des Maladies des Femmes grosses.²⁷ Chapters were written on 'Of contusions or Bruises of the Head and other Parts of the Body of a newborn Babe'. 'Of the Mould of the Head' and 'Of the Sutures being too open'. With reference to the anterior fontanelle, it was commented that 'There are some children who have it open sometimes till they are three years old if not longer, which is a great sign of the weakness of their natural Head'. Thus the importance of both birth injury and congenital hydrocephalus appears to have been recognised.

It is important not to ignore William Harvey's Exercitationes de generatione animalium²⁸ which laid the foundations of modern embryology.

The Eighteenth Century.

By the beginning of the eighteenth century, with the emphasis amongst medical men moving from philosophy to observation, the ventricular theory of brain function was being superseded by the glandular theory. In the context of developmental medicine it is instructive to review the knowledge of the nervous system, conception, the foetus and young infant and of hydrocephalus, convulsion and palsy as defined in Quincy's Lexicon Physico-Medicum, or New Medical Dictionary.²⁹ The 'nervous fluid, or animal spirits' was considered to be an ultrafiltrate of blood, with 'the great Use' of the cerebellum being to separate the nervous fluid from the blood. Of the cerebrum it was noted that 'the Cortical Part is always on the Outside . . . is nothing but a heap of little oval Glands'. The medullary substance of the brain was considered to be the beginning of all the nerves, but it was acknowledged 'that each Fibre of the Nerves answers to a particular Part of the Brain at one End, and to a particular Part of the Body at its other End'. Sensation, although recognised as ultimately involving the nervous system, was thought to be initiated by 'Action of the finer more fluid Parts of the Bodies upon the Organs of Sense', and it is not clear whether the term was used more to describe alterations in emotion or consciousness than changes which would be regarded as sensory at the present time. This is further exemplified by the definition of palsy as 'a Privation of Motion, or Sense of Feeling, or both, proceeding from some Cause below the Cerebellum, join'd with a Coldness, Softness, Flaccidity, and at last, wasting of the Parts'. Even though specific motor nerves were acknowledged to relay information to specific areas of the brain, the cerebrum and cerebellum were believed not to be involved in the pathology of palsy. However, the terms paraplegia and hemiplegia were in use for bilateral and unilateral pareses respectively. Quincy's descriptions of foetal life were somewhat fanciful but show appreciation of the sequence of neural tube development. Under Conception he recorded ' . . . then the placenta beings to appear like a little cloud . . . and at the same time the spine of the embryo is grown so big as to be visible; and a little after the Cerebrum and the Cerebellum appear like two small Bladders, and the Eyes next stand goggling out of the Head . . .' His explanation for the onset of labour was that at about the ninth month the foetal head 'which was always specifically lighter than any other Part, becomes specifically heavier, its Bulk bearing a much smaller

Proportion to its Substance than it did, and consequently it must tumble in the liquor . . . so that its Head falls down, its Feet get up, and its Face turns towards its Mother's Back'. Thus Quincy appreciated that in early pregnancy the foetal head tends to be relatively larger than towards term. Comments on the anterior fontanelle reveal that its size and the configuration of the sutures were known to be of significance in infantile well-being. With reference to the anterior fontanelle it was noted that 'This is open the Breadth of a finger or two in the middle in young Children, but grows closer with Age; altho sometimes in Convulsion-Fits, or in a bad conformation, it not only closes in Children, but the Edges shoot over one other; which is what the good Women call Head-Mould Shot, after which they seldom live long'. Difficulties in terminology are apparent in the definitions given by Quincy for convulsion and epilepsy. He said for convulsion that 'a great many Disorders are included under this Term, having different Names according to the Parts they affect, or the Causes they are supposed to arise from' further suggesting that in previous literature it may have been unwise to assume that all references to convulsions were to conditions likely to be associated with cerebral electrical disturbance. Nevertheless, Quincy says of epilepsy: 'It is a Convulsion . . .' and later ' . . . an Epilepsy differs from a Convulsion only in this, that in an Epilepsy, Sensation suddenly ceases, with an immediate Prostration of the Body'. Convulsions were believed to be the result of a sudden rush of blood or nervous fluid to the peripherally affected part. 'Hydrocephalum' is described as a progressive disorder ending in death after convulsions 'when the Head is stuffed and soft with Water'.

At much the same time as this edition of Quincy's medical dictionary was produced the first edition of The Scots Magazine appeared.³⁰ These recorded on a monthly basis the numbers, ages and fatal illnesses of those buried in Greyfriars Churchyard, Edinburgh, a graveyard which accommodates many famous medical persons from previous centuries. In 1739, 50.7% of 1051 burials were of children under the age of five years, with teething and chin-cough being responsible for half the childhood mortality. Thus it is not surprising that there is little evidence in eighteenth century literature of interest in developmental medicine. Nevertheless, chapters on convulsions, hydrocephalus and neonatal headshapes continued to appear. In A general and Compleat Treatise on all Diseases incident to Children . . .³¹ four types of hydrocephalus are

described. Two were within the cavity of the cranium and two on the outside. The external forms are clearly sub-aponeurotic haemorrhage and cephalhaematoma, whereas the internal types were firstly epidural collections and secondly 'betwixt the dura and pia mater or in the circumvolutions of the brain or in its ventricles, which last is the most frequent of all'. Therefore, it seems that the term hydrocephalus was not restricted in its use to enlargement of the head resulting from excessive cerebrospinal fluid collection. Furthermore, An account of the symptoms in the dropsy of the ventricles of the brain by Whytt³² is a commentary on 'a type of hydrocephalus' which is probably secondary to meningitis and associated with a fatal outcome, but Whytt mentioned that hydrocephalus was not always found at post-mortem and it is concluded that hydrocephalus may have been used rather loosely for serious non-convulsive disorders of clearly cerebral origin.

Further observations were made on moulding of the neonatal head in labour by Smellie³³ in Theory and Practice of Midwifery. In 'Of Mouldshot Heads, Contusions and Excoriations' he described mould-shot heads as those in which the parietal bone overrode the occipital bone. The possible significance of classification of the different types of moulding is not obvious.

Early in the eighteenth century reports on the chemical constituents of the brain began to appear. McIlwain³⁴ records that by 1800 it had been discovered that phosphorus, oxalic acid, soap-like materials, ammonia, sodium, calcium, proteins and possibly cholesterol were constituents of cerebral tissue. This work complemented gross pathological studies of infant brains and between 1798 and 1828 Gall is reported to have described post-embryonic myelinisation.³⁵

DEVELOPMENTAL MEDICINE FROM THE NINETEENTH CENTURY TO MODERN TIMES

The Nineteenth Century.

In previous centuries it has seemed, although new conditions were being described, that physicians felt obliged to include them under the generic titles of either convulsions/epilepsy or hydrocephalus. The nineteenth century saw the inclusion of many more scientific procedures in the investigation of both health and disease and a

greater confidence in personal observation and interpretation. At the beginning of the century William Buchan in Domestic Medicine; or, The Family Physician. With notes and large additions by a medical gentleman.³⁶

includes only 'Convulsions' and 'On water in the Head' in his section on childhood diseases, but children are additionally mentioned in the context of epilepsy, hydrocephalus and palsy. Buchan also commented on deformity which he said might proceed from weakness or diseases though he did not specify likely conditions and in any case believed that deformity was usually due to improper clothing. Convulsions were noted to be seldom a primary disease, but a symptom of a general disorder and to be not necessarily an unfavourable symptom of the underlying condition. Amongst the causes of epilepsy, in addition to heredity he listed head injury, 'collections of water, blood or serous humours in the brain', and tumours. He also commented that when the disease proceeds from a wrong formation of the brain, a cure is not to be expected, showing that congenital malformations were recognised even if they were not usually considered worthy of a position in a treatise on disease. 'Of water in the head' contains information suggesting an acquired rather than a congenital problem and most of the entry reads almost as though it had come straight from Whytt's Dropsy of the brain.³²

However, Buchan's description suggests that consciousness is retained 'for the patient while he sees objects double, usually squints'. A posterior fossa tumour rather than tuberculous meningitis seems the most likely cause of hydrocephalus in these circumstances. Palsy is defined as 'loss or diminution of sense, or motion, or both, in one or more parts of the body'. That the cerebral importance of movement was still not accepted is shown by the comment: 'If the face be affected, the case is bad, as this shews that the disease proceeds from the brain. Amongst causes of palsy are cited wounds of the brain or spinal marrow and pressure upon the brain or spinal marrow. No mention is made of the possibility that birth trauma might be relevant.

In the fifty years between this edition of Buchan's book and Lectures on the Diseases of Infancy and Childhood,³⁷

substantial advances were made in the knowledge of brain composition, and in the function of the brain and peripheral nerves. McIlwain³⁴ has reviewed the acquisition of information on chemistry. By 1850, organic combinations of phosphorus and cholesterol had been identified, phospholipids had been degraded to olein and phosphoric

acid, glycerophosphoric acid had been obtained from lipids and lactic acid had been identified in the brain. From the anatomo/physiological viewpoint Major³⁸ and Walshe³⁹ have reported that Magendie [1822] had proved that the anterior spinal nerves were motor and the posterior sensory in function; Andral [1833] and Bouillard [1836] had shown crossed paresis in cerebral hemisphere lesions with loss of speech if the left hemisphere was affected or a right hemiplegia present; Brown-Séguard [1849] had described the physical signs of hemi-section of the spinal cord and Helmholtz [1850] had measured the velocity of the nerve impulse. From a more obviously developmental viewpoint an 'early excellent description of cretinism' is credited to Curling.⁴⁰

In his review of the early recognition of the pathological lesions associated with hemiplegia, Ingram⁴¹ credits Cazauvielh with the observation in 1827 that localised cerebral atrophy and cerebral hemiatrophy were associated with childhood hemiplegia and with attempts to distinguish between developmental abnormalities of the brain and brain injury. Little's description of the clinical types of cerebral palsy appeared in 1843 and 1862.⁴¹ 'Hemiplegic rigidity' [later recognised as congenital hemiplegia], 'paraplegia or generalised rigidity' and 'disordered movement' [probably athetoid cerebral palsy] were described as resulting from birth injury which was recognised as being more likely if an abnormal delivery had occurred.

With a background of such activity in the neurological world, it is not surprising that in Lectures on the Diseases of Infancy and Childhood, Charles West³⁷ was able to expand the range of neurodevelopmental subjects covered and the information about each subject. His opening remarks comment that in London, in the years 1842 and 1845 16,258 people died of neurological disease and of these 9,350 [57.5%] were children of under five years of age. Almost one third of the Lectures were on cerebral disorders, and West shows that he appreciated both anatomical and functional development to be important. He noted that the brain doubled its weight in the first two years of life and wrote at length on immaturity of the intracranial vasculature. His comments on observation as a means of divining the signs of neurological disease could be read with value by any aspiring neurodevelopmentalist. There, was, however, a remaining ambivalence in accepting the role of the brain as a controller of movement. Although West

wrote 'In early life the superintendence of the motor power is the chief function of the brain, which has not yet attained its highest office as the organ of intellect', in the context of convulsions he stated: 'The grand reason of their frequency is . . . the predominance of the spinal over the cerebral system in early life'. He separated cerebral haemorrhage and cephalhaematoma from 'hydrocephalus'. However, even though a further Lecture was entitled 'Hydrocephaloid Disease. Tubercle of the Brain. Hydatids and Cancer of the Brain', he felt obliged to include the illness described by Whytt³² in which the ventricles may not be enlarged and which was probably tuberculous meningitis, in the chapter on acute hydrocephalus. Nevertheless, the section on chronic hydrocephalus described internal and external forms and acknowledged the role of congenital malformations as well as previous infection in the aetiology. Although there was a Lecture on spinal cord disease, nothing suggestive of spina bifida is described. A Lecture on hypertrophy and atrophy of the brain recognised preservation of cerebral size despite wasting of the body rather than true hypertrophy and loss of cerebral tissue in protracted illness or as a developmental defect. In a letter to the Lancet in 1841 'On a peculiar form of infantile convulsion',⁴² W.J. West had described in his own child infantile spasms, a highly age-dependent type of seizure, but this type of fit appears neither in Charles West's Lecture on Epilepsy, nor in his description of convulsions!

Starting in the middle of the nineteenth century, elucidation of cerebral function by the use of external chemicals, e.g. anaesthetics complemented further studies of the constituents of the brain. Between 1854 and 1882 von Bibra, Müller and Thudicum are reported respectively to have determined the cerebral distribution of solids, fats and inorganic material, to have demonstrated the presence of creatine and some purines and of inositol and cerebronic acid.³⁴ Of particular developmental interest are the studies of von Bibra⁴³ and Schlossberger⁴⁴ who compared the chemistry of different parts of the human brain and found that the white matter contained greater quantities of fatty material than the grey matter, and that these differences were not found in corresponding areas of the embryonic brain. This finding was later positively correlated with the process of myelinisation.

Contemporaneously, Erb⁴⁵ was one of the first to employ electricity as a diagnostic aid and is credited with producing in 1884 the first clear description of progressive muscular dystrophy, and, Broca⁴⁶ localised the centre for executive speech in the third left frontal convolution, leading to the systematic mapping out of areas of the brain on the basis of their function. The origins of the pyramidal tracts were discovered by experimental physiologists in the 1870's and Babinski described the extensor plantar response in 1896.⁴⁷ Other important developments in the latter half of the nineteenth century were the publication of Darwin's Origin of Species,⁴⁸ Mendel's monograph on inheritance,⁴⁹ and the recognition of chromosomes [Strasburger^{50,51}].

With the final acceptance of the abnormal/damaged brain as an important feature in many movement as well as mental disorders, physicians turned their attentions to the homes for mentally and physically disabled children and began to describe symptom complexes. In 1866 the first recognisable description of a chromosomal disorder appeared when Down reported the clinical features of the syndrome now bearing his name.⁵² Duchenne described pseudohypertrophy in the muscular dystrophy now named after him in 1868.⁵³ Of the neurodermatoses, Bourneville is credited with the first report, in 1880, on tuberous sclerosis.⁵⁴ Warren Tay⁵⁵ noted the eye changes in infantile GM2 gangliosidosis [Tay-Sachs disease] seven years before Bernard Sachs⁵⁶ reported the neurological findings in the first of the neurodegenerative diseases to be characterised. Although biochemical, microbiological and electrical diagnostic techniques were developing rapidly at this time it was very many years before laboratory tests were helpful or diagnostic in any of these conditions.

Gowers' Epilepsy and Other Chronic Convulsive Diseases: Their Causes, Symptoms and Treatment⁵⁷ was published in 1885. He includes the sub-headings of 'Age', with four further sub-divisions, and 'Infantile causes' in the chapter on aetiology, and later considers the influence of age on prognosis. Gowers noted that with different ages of onset the sex incidence altered, with the female preponderance being less obvious, the younger the age group analysed. Gowers also analysed the relationship of heredity to age and sex and of the form of attack to age and sex. He recognised that an 'exciting cause' was met with in males much more frequently than in females. He was of the opinion that in

a large majority of the cases of childhood convulsions the underlying cause was rickets, since many of the affected children were late in teething and late in walking and many, but by implication by no means all, had crooked limbs. The increased predisposition of backward children to fits was also recognised. The suggestion that convulsions beget convulsions were implied in the observation that it seemed reasonable to ascribe to the convulsions of infancy a share in predisposing to the convulsions of later life. Although Sato⁵⁸ gives Poupert⁵⁹ the credit for the description of the clinical features of classical petit mal, it appears that Gowers did not clearly distinguish between petit mal and temporal lobe epilepsy.

The Twentieth Century 1900 - 1940.

As though the need to adhere to previously defined subjects had finally been relinquished, the chapter headings in Still⁶⁰ Common Disorders and Diseases of Childhood read much more convincingly as though based on combined personal and pathological experience than those of West fifty years earlier. Still starts his book with a section on the importance of knowledge of normality which gives accounts of expected physical and mental development, including serial measurements of the head circumference up to the age of thirteen years. Later chapters on mental deficiency, enuresis and faecal incontinence, and, disorders of speech show that Still was aware of the importance of developmental disabilities. The cerebral palsies are awarded a part separate from both infantile paralysis (poliomyelitis) and chorea, which seems finally to have been separated from convulsions. Still also included a chapter on 'Head-nodding with Nystagmus in infancy'. In 'The Cerebral Palsies of Childhood', Still analyses his own figures for infantile hemiplegia, spastic paraplegia, spastic diplegia and spastic monoplegia and shows that all these types of cerebral palsy were commoner in males than females. He does not seem to have been aware that Batten⁶¹ had added non-progressive ataxia to the types of cerebral palsy previously reported. In his exploration of the relationship of cerebral palsy to convulsions, asphyxia, premature birth and syphilis, Still found eleven of his twenty five cases of paraplegic cerebral palsy had been born prematurely. No mention is made in the book of spina bifida.

Advances leading to greater understanding of nervous

function continued apace. In the early 1900's Sherrington described reciprocal innervation and reciprocal inhibition by means of which antagonistic muscles coordinate their activities in any movement.³⁸ This was clearly an important milestone in the understanding of the motor deficits in cerebral palsy. Ramón y Cajal examined the finer structure of the central nervous system in a painstaking manner and made many important fundamental discoveries in the fields of neuropathology and neuroanatomy during the early years of the century.³⁸ Somewhat later Dale³⁸ demonstrated the chemical transmission of nerve impulses. The development of diagnostic X-ray procedures made the air ventriculogram⁶² contrast pictures of the spinal canal using an oily iodine substance⁶³ and cerebral arteriography⁶⁴ available to clinicians. In 1929, Hans Berger⁶⁵ produced his first article on electroencephalography (EEG) and by 1932 he had described the patterns of records taken throughout normal infancy up to adulthood, demonstrating the relative increase in faster rhythms and decrease in slower rhythms which occurs with age.⁶⁶ Perhaps the most important factor contributing to an explosion of interest in developmental medicine later this century was the discovery of penicillin by Alexander Fleming in 1928 and the subsequent recognition of the therapeutic potential of this and other antibiotics.

In addition, child psychiatry and psychology became established disciplines during this period with Jean Piaget in Switzerland and Arnold Gesell in the United States both observing in detail the development of infants and young children and Gesell later producing with Amatruda the Gesell Developmental Scales.⁶⁷ It is important, also, not to ignore the contributions made by Sigmund Freud at the turn of the century to the understanding of both cerebral palsy and childhood behavioral disorders.

The Twentieth Century after 1940.

The Second World War produced an unparalleled overall assessment of the British population. The issue of ration cards was much more than a socialist exercise. As a result of the more even distribution of food, the general standard of nutrition became much better than it had ever been. This, combined with the effectiveness of antibiotics in controlling bacterial disease, led to a greater awareness of chronic handicap and of the importance of studying both normal and abnormal development. If one takes as an index

of this interest an analysis of the yearly numbers of publications on cerebral palsy reported in the Quarterly Cumulative Index Medicus from 1944 to 1953, Current List of Medical Literature 1958, Cumulative Index Medicus 1963 and 1964, 1973 and 1974, and 1983 this shows a gradual rise from less than twenty papers per year in 1944 and 1946, to about forty per year in 1947 and 1951, a slightly artificial peak to sixty one in 1952 following a Symposium reported in the Journal of Pediatrics, with a fall to thirty five in 1953, followed by a more rapid rise to eighty three in 1958, one hundred and ten and one hundred and sixty in 1963 and 1964, with subsequent levelling off at around ninety to ninety five per year in 1973, 1974 and 1983. Interest in developmental disorders other than cerebral palsy grew in parallel. However, it is probably on the basis of cerebral palsy and to a lesser extent convulsive disorders that the pioneer centres of developmental paediatrics began.

In 1951 Guy's Medical Committee gave Dr Ronnie MacKeith permission to hold a clinic at which handicapped children were assessed.⁶⁸ MacKeith regarded as a special feature of this clinic that at least one and a quarter hours was allotted to each child and his parents. Thirteen years later with Dr Polani, Dr Hume Kendall and Dr Mary Sheridan, MacKeith formally started the Newcomen Clinic attached to Guy's Hospital, London. The Spastics Society had made accommodation available in a building whose recent history had included use as a public house. By 1969 the Newcomen Clinic housed a Cerebral Palsy Research Unit, and programmes involved with developmental screening, speech and language development, social aspects of childhood and involvement of the community services in the care of the handicapped were under way. From its inception, a particular feature of the Clinic has been teaching. It has always been forward-looking and in 1976 the Newcomen Handicapped Children's Fund listed fourteen major headings under which it was proposed that further research would be desirable.

Further north, in the the early 1960's Dr Tom Ingram started a clinic for cerebral palsy at Westerlea, a house in Corstorphine, Edinburgh occupied by the Scottish Council for the Care of Spastics. The children were assessed by a paediatric neurologist, an orthopaedic surgeon, physio-, occupational and speech therapists, a psychologist and a social worker. After the individual assessments a meeting was held to discuss the management of the child seen as a whole and in the context of his family. By 1965, Ingram had

established at the Royal Hospital for Sick Children, Edinburgh similar combined clinics for children with spina bifida and hydrocephalus, speech disorders, cleft palate and convulsive disorders, in addition to his regular paediatric neurology clinic to which children came from all over Scotland. Also in Edinburgh at this time, Dr Cecil Drillien was studying the development of the premature infant and pioneering the use of sophisticated statistical methods in the analysis of developmental data.

With the encouragement of Professor R.S. Illingworth, Dr Kenneth Holt organised services for children with developmental problems at the Ryegate Centre in Sheffield in the early 1960's. From Sheffield he was invited to work at the Institute of Child Health in London and began to set up the Wolfson Centre in 1965. His was the first academic appointment specifying the title of developmental paediatrics and in 1975 he was created Professor of Developmental Paediatrics in the University of London.

Working at the Park Hospital for Children, Oxford from the 1950's, Dr C. Ounsted began studies on the long-term outlook for children whose seizures started in early infancy. He has shown for all seizure disorders that the type and outcome cannot be examined except in the context of developmental medicine and has drawn particular attention to the circumstance in which a positive family history can be protective. While in Oxford, Taylor, using the seizure as a means of studying brain function, developed theories of cerebral maturation.⁶⁹

Since the 1960's, workers in the Royal Postgraduate Medical School at the Hammersmith Hospital, London have pioneered the neurodevelopmental study of the pre-term and full-term newborn under the guidance of initially Professor Peter Tizard and more recently Professor Victor Dubowitz.

The interest in developmental medicine was by no means confined to the British Isles. By the middle 1960's clinics for the assessment and treatment of handicapped children had been established throughout the Scandinavian countries. The first book to be published in the Little Club Clinics in Developmental Medicine, The Neurological Examination of the Infant was written by André-Thomas, Yves Chesni and S. Saint-Anne Dargassies.⁷⁰ Working in Paris, their first publication on this subject had appeared in French eight years earlier.⁷¹ Their clinical findings were complemented

by the EEG studies of Dr C. Dreyfus-Brissac whose painstaking recordings allowed her and her colleagues to comment on maturational patterns observed in both pre-term and full-term infants.^{72,73} Interest in neurophysiological measurements was also high in Germany where Nolte and her co-workers examined the maturation of the EEG in small-for-gestational-age infants.⁷⁴

From Copenhagen came information on the normal values for conduction velocities of peripheral nerves in infancy and childhood.⁷⁵ Prechtel, working in Groningen, pioneered the use of polygraphic recordings and produced as the first of his famous contributions to the Little Club Clinics, The Neurological Examination of the Full-term Newborn Infant.⁷⁶ Beautiful descriptions of the anatomical development of the foetal and infant brain have appeared from the United States⁷⁷ and Denmark.⁷⁸

With greater understanding of disease processes and better diagnostic facilities, not only were the causes of handicapping conditions better understood and more diagnostic categories identified, but potentiality for both treatment and prevention improved. Three examples will suffice. In 1941 Levine, Burnham and Katzin⁷⁹ drew attention to the importance of the rhesus factor in the genesis of neonatal hyperbilirubinaemia with the subsequent risk of athetoid cerebral palsy and deafness. Exchange transfusion was a somewhat hazardous, but on the whole effective procedure in controlling the serum bilirubin level, but with the advent of the general use of anti-Rh immune globulin in the prevention of maternal sensitisation in the late 1960's/early 1970's, Rh-incompatibility as a cause of cerebral palsy has virtually disappeared. Phenylketonuria was recognised as a cause of mental handicap in 1934,⁸⁰ but it was not until the early 1960's that a low phenylalanine diet was used in treatment and found to allow more or less normal cerebral function. In 1964 population screening for phenylketonuria began and it is now unusual for this disorder to be diagnosed after the critical time when dietary measure are therapeutic. The serious effects of prenatal rubella were described by Gregg in 1941.⁸¹ Society's initial reaction was to offer a therapeutic termination of pregnancy to any woman who came into contact with rubella during the first trimester. More recently the emphasis has been on prevention, with vaccination against rubella being offered to all seronegative adolescent girls.

Hagberg, MacKeith and Ingram⁸² stated that meeting the needs of the handicapped child and his family required early recognition, full assessment, a plan of action, immediate treatment, support for the family, continuing help, periodic reassessment and replanning. The first of these requirements can now sometimes be met antenatally. Straight X-rays, ultra-sonic pictures, amniotic fluid examination, foetal fibroblast culture, foetal blood analysis, maternal blood and urinary examination and chronic villus biopsy have all helped to make the foetus more of a known person. The importance of defects other than motor and convulsive in chronic handicapping conditions was increasingly recognised once full assessment in combined clinics had commenced. In particular, visual, auditory and perceptual problems were acknowledged as contributory factors in the failure of children with easily identifiable motor disorders to make expected progress in educational spheres. In addition to the many publications on cerebral palsy recognising multiple handicap, the work of Tew⁸³ on children with spina bifida and hydrocephalus is instructive. Only after the detection and the assessment of the developmental problem can plans of action, treatment and support for the family be usefully prepared.

It is important to recognise the contribution to advances in care and management of the developmentally disabled child given by voluntary bodies and professional societies. To name only a few of those active in Britain, the Spastics Society, the Scottish Council for the Care of Spastics, Action Research for Crippled Children, the British Epilepsy Association and the Association for Spina Bifida and Hydrocephalus have all contributed manpower, research funds and above all, enthusiasm for the betterment of the child with developmental problems.

SUMMARY

In the search for knowledge on developmental disorders through the ages it has been necessary to consider contemporaneous theories of brain and nerve development. Until the middle of the nineteenth century when electrophysiological and biochemical techniques came to be used in diagnosis, reliance for the categorisation of disease was very largely on clinical evaluation. A centuries-long tendency to include all neurological disorders under the headings of either hydrocephalus or

convulsions was then overcome. Nevertheless, even well into the twentieth century the high mortality of infants born without defects meant that the study of those with handicaps did not receive much priority.

A surge of interest in developmental paediatrics which started in the 1950's has led to the recognition of much unexpected potential and to the greater understanding of the very variable needs of the handicapped child and his family.

REFERENCES

1. Lloyd, G.E.R. [ed.] Hippocratic Writings [430-330 BC], Harmondsworth, England: Penguin Books Ltd., 1983, 215-6, 237-51, 322-3.
2. Aristotle [384-322 BC], quoted by Still, G.F. in The History of Paediatrics, London: Dawsons of Pall Mall, 1965, 14-6.
3. Still, G.F. The History of Paediatrics, London: Dawsons of Pall Mall, 1965.
4. Aegineta, P., quoted by Still, G.F. op. cit., 40-1.
5. Rhazes, quoted by Still, G.F. op. cit., 42-3.
6. Avicenna, quoted by Still, G.F. op. cit., 48-9, 53.
7. St Augustine [354-430], quoted by Pagel, W. 'Medieval and Renaissance contributions to the brain and its functions' in The History and Philosophy of Knowledge of the Brain and its Functions, Oxford: Blackwell Scientific Publications, 1958, 95-114.
8. Pagel, W. 'Medieval and Renaissance contributions to the brain and its functions' in The History and Philosophy of Knowledge of the Brain and its Functions, Oxford: Blackwell Scientific Publications, 1958, 95-114.
9. Bagellardo. Libellus de Egretudinibus Infantium, 1472, quoted by Still, G.F. op. cit., 62.
10. Metlinger, B. Ein Regiment der Jungen Kinder, 1473, quoted by Still, G.F. op. cit., 70-1.
11. Roelans 1483/84, quoted by Still, G.F. op. cit., 74.
12. Tolet, P. Opusculum Recens Natum de Morbis Puerorum, 1538, quoted by Still, G.F. op. cit., 67.
13. Roesslin The Dyrth of Mankynde, 1540, quoted by Still, G.F. op. cit., 98.

14. Phaer, T. The Boke of Chyldren, 1st Edn, 1545, quoted by Still, G.F. op. cit., 108-27.
15. Phaer, T. The Boke of Chyldren, 1567 Edn, quoted by Still, G.F. op. cit., 118.
16. Ferrarius De Arte Medicum Infantum, 1577, quoted by Still, G.F. op. cit., 150-2.
17. Mercuriale De Morbis Puerorum, 1583, quoted by Still, G.F. op. cit., 160.
18. Zuccherus Tractatus de Morbis Puerorum, 1604, quoted by Still, G.F. op. cit., 183.
19. Cascales, P. Liber de Affectionibus Puerorum . . ., 1611, quoted by Still, G.F. op. cit., 188-9.
20. Pemell, R. A Treatise of the Diseases of Children, 1653, quoted by Still, G.F. op. cit., 236-9.
21. Pemell, R. De Morbis Capitis, or, Of the Chief Internall Diseases of the Head, 1650, quoted by Still, G.F. op. cit., 236-9.
22. Starsmare, T. Children's Diseases, Both Outward and Inward, 1664, quoted by Still, G.F. op. cit., 254-7.
23. Sylvius de le Boë De Morbis Infantum et Aliis Quibusdam Memoratu Dignis Affectibus, quoted by Still, G.F. op. cit., 267-8.
24. Willis, T. Pathologiae Cerebri et Nervosi Generis Specimen. In Quo Agitur de Morbis Convulsivis et de Scorbuto, 1667, quoted by Still, G.F. op. cit., 282-4.
25. Sydenham, T. Schedula Monitoria, Latham's translation, Sydenham Society's Edn, 1686, Vol. II, 198.
26. Culpeper, N. A Tractate of the Cure of Infants, quoted by Still, G.F. op. cit., 262.
27. Mauriceau, F. Traite des Maladies des Femmes grosses, translated by Chamberlen, 1673, quoted by Still, G.F. op. cit., 264.

28. Harvey, W. Exercitationes de Generatione Animalium, 1651.
29. Quincy, J. Lexicon Physico-Medicum, or, A New Medical Dictionary, 3rd Edn, 1726, 59, 75, 92, 97, 99, 146, 172, 213, 347.
30. The Scots Magazine, 1739, Vol. 1.
31. Astruc, J. A General and Compleat Treatise on all the Diseases Incident to Children . . ., 1746, quoted by Still, G.F. op. cit., 374.
32. Whytt, R. An Account of the Symptoms in the Dropsy of the Brain, 1768, quoted by Still, G.F. op. cit., 444-9.
33. Smellie, W. Theory and Practice of Midwifery, 1752, quoted by Still, G.F. op. cit., 452.
34. McIlwain, H. 'Chemical contributions, especially from the nineteenth century, to knowledge of the brain and its functioning' in Poynter, F.N.L. (ed.) The History and Philosophy of Knowledge of the Brain and its Functions, Oxford: Blackwell Scientific Publications, 1958, 167-86.
35. Ackerknecht, E.H. 'Contributions of Gall and the phrenologists to knowledge of brain function' in Poynter, F.N.L. (ed.) The History and Philosophy of Knowledge of the Brain and its Functions, Oxford: Blackwell Scientific Publications, 1958, 151.
36. Buchan, W. Domestic Medicine; or, The Family Physician. With notes and large additions by a medical gentleman, Edinburgh: 1802, 13, 371, 414-5, 417-20, 594-7.
37. West, C. Lectures on the Diseases of Infancy and Childhood, London: 1852, Lectures I to XII.
38. Major, R.H. A History of Medicine, Oxford: Blackwell Scientific Publications, 1954, Vol. 2.

39. Walshe, F.M.R. 'Some reflections upon the opening phase of the physiology of the cerebral cortex, 1850-1900' in Poynter, F.N.L. (ed.) The History and Philosophy of Knowledge of the Brain and its Functions, Oxford: Blackwell Scientific Publications, 1958, 223-34.
40. Curling, T.B. 1850, quoted by Major, R.H. op. cit., 882.
41. Ingram, T.T.S. Paediatric Aspects of Cerebral Palsy, Edinburgh and London: E & S Livingstone, 1964, 1-21.
42. West, W.J. 'On a peculiar form of infantile convulsions' Lancet 1841, 1, 724-5.
43. Von Bibra 1854, quoted by McIlwain, H. 'Chemical contributions, especially from the nineteenth century, to knowledge of the brain and its functioning' in Poynter, F.N.L. (ed.) The History and Philosophy of Knowledge of the Brain and its Functions, Oxford: Blackwell Scientific Publications, 1958, 167-86.
44. Schlossberger 1856, quoted by McIlwain, H. 'Chemical contributions, especially from the nineteenth century, to knowledge of the brain and its functioning' in Poynter, F.N.L. (ed.) The History and Philosophy of Knowledge of the Brain and its Functions, Oxford: Blackwell Scientific Publications, 1958, 167-86.
45. Erb, W. 1884, see Major, R.H. op. cit., 963.
46. Broca 1861, see Major, R.H. op. cit., 888.
47. Babinski 1896, see Major, R.H. op. cit., 965.
48. Darwin, C. The Origin of Species, 1859.
49. Mendel 1866, referred to by Zellweger, H. and Simpson, J. in Chromosomes of Man, London: William Heinemann Medical Books, 1977, 1.
50. Strassburger, E. Zellbildung und Zellteilung, Jena: Fisher, 1880.

51. Strassburger, E. 'Ueber den Theilungsvorgang der Zellkerne und das Verhaltnis der Kerntheilung zur Zelltheilung' Arch. Mikroskop. Anat. 1882, 20, 476-590.
52. Down, J.L.H. 'Observation on an ethnic classification of idiots' London Hospital Report 1866, 3, 259-62.
53. Duchenne, G.B.A. 1868, see Major, R.H. op. cit., 880.
54. Bourneville, D.M. Contribution à l'étude de l'idiotie-sclerose tubereuse des circonvolutions cérébrales: idiotie et epilepsie hemiplegique. Arch. Neurol. 1880, 1, 69-91, 670, 671.
55. Tay, W. 'Symmetrical changes in the region of the yellow spot in each eye of an infant' Trans. Ophthal. Soc. U.K. 1881, 1, 55.
56. Sachs, B. 'On arrested cerebral development with special reference to its cortical pathology' J. Nerv. Ment. Dis. 1887, 14, 541.
57. Gowers, W.R. Epilepsy and Other Chronic Convulsive Diseases: Their Causes, Symptoms and Treatment, New York: Dover Publications, 1964, 5-19.
58. Sato, S. 'Generalised seizures: absence' in Dreifuss, F.E. Pediatric Epileptology, Boston: John Wright PSG, 1983, 65.
59. Poupart 1705, referred to by Sato, S. op. cit.
60. Still, G.F. Common Disorders and Diseases of Childhood, Oxford: Oxford Medical Publications, 1909, Chapters I, XXXII, XXXVI, XL-XLVI.
61. Batten, F.E. 1903-1907, see Ingram, T.T.S. Paediatric Aspects of Cerebral Palsy, Edinburgh and London: E & S Livingstone, 1964, 6.
62. Dandy, W.E. 1918, cited in The New Encyclopaedia Britannica 15th Edn, Chicago: Encyclopaedia Britannica Inc., 1983, II, 838.

63. Sicard, J.A. 1921, cited in The New Encyclopaedia Britannica 15th Edn, Chicago: Encyclopaedia Britannica Inc., 1983, II, 838.
64. Moniz, A.E. 1927, cited in The New Encyclopaedia Britannica 15th Edn, Chicago: Encyclopaedia Britannica Inc. 1983, II, 838.
65. Berger, H. 1929, quoted in Gibbs, F.A. and Gibbs, E.L. Atlas of Encephalography, Cambridge, Mass: Addison-Wesley Press, 1941.
66. Gibbs, F.A. and Gibbs, E.L. Atlas of Encephalography, Cambridge, Mass: Addison-Wesley Press, 1941.
67. Gesell, A. and Amatruda, C.S. Developmental Diagnosis 2nd Edn, New York: Hoeber, 1947.
68. MacKeith, R. 'The Newcomen Clinic' Guy's Hospital Gazette 1969, 266-72.
69. Taylor, D.C. 'Differential rates of cerebral maturation between the sexes and between hemispheres. Evidence from epilepsy' Lancet 1969, 2, 140-2.
70. André-Thomas, Chesni, Y. and Sainte-Anne Dargassies, S. The Neurological Examination of the Infant, London: The Medical Advisory Committee of the National Spastics Society, 1960.
71. André-Thomas, Saint-Anne Dargassies, S. Études Neurologiques sur le Nouveau Né et le Jeune Norrisson, Vol. I, Paris: Massou, 1952.
72. Dreyfus-Brissac, C. and Monod, N. 'Veille, sommeil et réactivité chez le nouveau né à terme' in 'Conditionnement et réactivité en electroencephalographie' Electroenceph. Clin. Neurophysiol. 1957, Suppl. 6, 425-31.
73. Dreyfus-Brissac, C., Samson-Dollfus, D., and Sainte-Anne Dargassies, S. 'Veille, sommeil et réactivité sensorielle chez le prémature' in 'Conditionnement et réactivité en electroencephalographie' Electroenceph. Clin. Neurophysiol. 1957, Suppl. 6, 417-24.

74. Nolte, R., Schulte, F.J., Michaelis, R., Weisse, U., and Gruson, R. 'Bioelectrical brain maturation in small-for-dates infants' Develop. Med. Child Neurol. 1969, 11, 83-93.
75. Wagner, A.L. and Buchthal, F. 'Motor and sensory conduction in infancy and childhood: reappraisal' Develop. Med. Child Neurol. 1972, 14, 189-216.
76. Prechtl, H. 'The neurological examination of the full-term newborn infant' Clinics in Developmental Medicine No. 4, London: William Heinemann Medical Books, 1964.
77. Volpe, J.J. Neurology of the Newborn, Philadelphia: W.B. Saunders, 1981.
78. Lou, H.C. Developmental Neurology, New York: Raven Press, 1982.
79. Levine, P., Burnham, L., and Katzin, E.M. 'Iso-immunisation in pregnancy; its possible bearing on the etiology of erythroblastosis fetalis' J. Amer. Med. Ass. 1941, 116, 825.
80. Brett, E.M. Paediatric Neurology, Edinburgh: Churchill Livingstone, 1983, 178.
81. Gregg, M.M. 'Congenital cataract following German measles in the mother' Trans. Ophthalmol. Soc. Aust. 1941, 3, 35.
82. Hagberg, B., Ingram T.T.S., and MacKeith, R. 'Development of paediatric neurology' Lancet 1970, 1, 940-2.
83. Tew, B. and Laurence, K.M. 'The effects of hydrocephalus on intelligence, visual perception and school attainment' Develop. Med. Child Neurol. 1975, Suppl. 35, 129-34.

THE HISTORY OF CHILD ABUSE

Bernard Knight

DR J. CAFFEY

It is generally considered that the present intense interest in the child abuse syndrome is a phenomenon which was born and which expanded almost explosively during the past two to three decades. Indeed, most people would consider that the recognition of the 'battered child' dates even more specifically from the papers of Caffey in 1946¹ and 1957,² when he first suggested that the combination of sub-dural haemorrhage and long bone fractures might be the result of parental abuse, though actually Ingraham in 1939³ had suggested that infant subdurals were traumatic in origin.

Though it is true that the modern phase of interest in the syndrome dates from these publications and from the flood of subsequent papers such as those of Silverman,⁴ Kempe, etc, the fact is that classical descriptions of parental injury to children are almost a century older than these modern revelations.

The publications of Caffey were, of course, radiological in nature, the author being a radiologist publishing in radiological journals. Much of the clinical and pathological detection of child-battering has come to depend upon the use of X-rays and it is therefore not surprising that a very long interval elapsed between the few papers written in the 19th century and the sudden eruption of interest in the 1950's, which was based substantially on radiological appearances. The Victorian pathologists and clinicians had nothing but their clinical acumen to rely upon for their diagnoses and perhaps this makes their present lack of recognition all the more unfortunate.

DR M. TOULEMOUCH

Though it was not a paper upon child abuse as such, one of the first possible mentions was in a somewhat obscure publication in 1853, which concerned the fatal whipping of a four-year old girl. This was written by Monsieur le docteur Toulemouche, of Rennes in Brittany, and published in the Annals of Public Hygiene and Legal Medicine.⁵

Dr Toulemouche entitled his paper 'Medicolegal considerations of two rather rare cases of mental aberration'. One of the cases was the whipping by a man of small girl to the point of death, but he does not indicate whether the culprit was a parent or guardian. His major concern was the act of whipping and he goes on to quote Zacchius about flagellation, but not the relationship of the victim to the assailant.

PROFESSOR A. TARDIEU

This paper was quoted by the major author on child abuse during the nineteenth century, the famous Professor Ambroise Tardieu, incumbent of the Chair of Legal Medicine in Paris. His name is, of course, assured of a place in forensic eponymy by its attachment to sub-pleural petechial haemorrhages in mechanical asphyxia, known as 'Tardieu spots', which he described in autopsies upon sudden infant deaths. Tardieu published his classical paper on child abuse in 1860, in the same journal as Toulemouche, the 'Annales d'Hygiène Publique et Médecine Légale'.⁶ His title was 'Étude médico-légale sur les seviles et mauvais traitements exercés sur des enfants', which freely translated reads: 'Medico-legal studies on brutality and ill-treatment upon infants'.

It is a long and rather verbose article of some thirty seven pages, written in difficult French which even after little more than a century, seems somewhat archaic. The content however, is remarkable in that so much is identical to present day concepts of child abuse and offers details which many of us thought unique discoveries of present day clinical methods and radiological techniques.

Basically, Taredieu's paper consists of a long preamble which discusses the whole spectrum of the adult abuse of infants, children and young persons. This is based upon thirty-two cases of such abuse, details of which are given in the second half of his paper. These cases are divided into three groups: firstly, nine cases of brutality and ill-treatment, then five cases of severe injuries and 'torture' which did not result in death: and finally, eighteen cases where the ill-treatment led to death. By no means all of his examples can be classified as 'non-accidental injury in childhood', as the rather euphemistic title is applied today. A number are instances of starvation, privation and hypothermia. Several others do not involve small infants, but older children - even teenage victims of harsh employers. However, the majority are the helpless recipients of parental abuse and the descriptions of both the circumstances and the actual injuries are chillingly familiar to modern observers of the battered child.

The whole paper is far too long to précis here, but consideration is worth giving to some of these comments and descriptions, in the light of modern experience:-

'This is the first paper on the subject and the other authors in legal medicine have not even mentioned it yet.'

'Amongst all the literature on wounds and injuries, there is one group which deserves a special category and which so far, has been ignored. This is where children are victims of their parents, guardians and those who exercise authority over them.'

'The results are always serious and often terrible. We are assured that the numerous examples collected by us will arouse sad reflections upon the moral causes of similar crimes.'

'The ferocity of the mothers and the feebleness of the fathers . . .'

'If the doctors are called in, they should tell the police and the pathologists should not be surprised at anything they see.'

'Many reports come from England of cruelty to children, but these are due to brutality by masters in industry, rather than ill-treatment by parents'.

'It is impossible to anticipate the form of injuries made with such a diversity of instruments. Hands, feet, cords, whips, batons, etc.'

'One sees infants thrown to the ground: contusions of all types made with a variety of instruments; knocked around in all senses.'

'Torture pushed to the extreme, consisting of burns with the help of red-hot irons, burning coals and corrosive liquids.'

'Tearing out of hair and tearing of ears; the victims of the most ordinary brutality and ill-treatment are the very young children. Of the 32 cases, 17 were younger than five years, 7 were between five and ten.'

'Of the the 32 cases, 24 were perpetrated by the parents (11 by both father and mother, 8 by the mother alone and 5 by the father alone). Step-mothers committed four instances, four by school-masters and one by a female employer.'

'The character of the brutalities and the traces which they leave on the bodies of the victims vary to the infinite. However, they offer some common characters which one finds in nearly all the cases and to which it is above all necessary to call the attention of medico-legists.'

'One is struck by the physiognomy offered by the poor children exposed to bad treatment. They are generally pale, of an extreme thinness, offering all the characteristics of a precocious decrepitude. Their faces breath sadness and are fearful, often stupified and

with dull eyes. One particular feature, very important to note, is the change in their expression when the child is put under the protection of charity or justice, when they see themselves being taken away from being beaten up for the rest of their lives.'

'The traces left upon the body by the ill-treatment are always remarkable for their multiplicity. Ecchymoses and bruises vary in coloration, attesting to the succession of blows and are found mainly on the face, the limbs and the posterior part of the trunk. They have the character of not occupying the points most likely to be affected by accidental injury caused by falling down.'

'The injuries upon the body often show the imprint of fingers or nails or the object causing the injury.'

'I have noticed oval red bruises coming from pinching and double blueish bruises formed by a narrow stick.'

'It is common to find torn ears and crushed fingers. Wounds and sores of the head and fractures which I have recounted examples.'

'Burning by hot shovels or irons, burning coals or corrosive liquids are examples of the tortures inflicted with the refinements of barbarism upon these poor young children.'

'It is a point of great interest from the point of view of medico-legal research to determine with precision the manner in which death was produced. In some the death is direct result of isolated violence. Such would be a fracture of the skull by a direct blow or the dislocation of cervical vertebrae by a sudden straining of the neck.'

'It happens that one finds especially in very young children exposed to such grave brutalities, alterations on the side of the encephalus. I have noted blotches of blood

on the inner surface of the skull manifestly brought about by blows on the head and body.'

'In a last category there are the most numerous cases in which the privation, the lack of care combined with brutalities, have led to a gradual alteration of which death is the last part, whether this arrives by the complete exhaustion of the poor little victim or hastened by an intercurrent malady caused by general feebleness.'

'The picture which I have just drawn will give an exact idea of the facts to which I would like to dedicate this study and I am confident that it will find a place in the medico-legal history of wounds and injuries. I believe it useful to alert in advance doctors called as experts, against the false appreciation and the errors which could be made by accepting the excuses that are habitually alleged by those culpable of grave brutalities.'

'It is common to attribute the contusions on the body to falls which the child suffered in playing or in accidents. The distinction is easy if you pay attention to the frightening multiplicity of the traces of wounds which cover nearly all the body - and the site of the contusions, which do not correspond to the usual pattern of accidents and falls.'

'Cruel parents who martyrise their children have no fear of invoking the right of parental correction.'

In these few extracts, many of the currently-accepted aspects of the child abuse syndrome are recognised. The varying ages of bruises, the finger-sized contusions, the fractured skull and sub-dural haemorrhages, the anxious faces of the infant victims and the ready excuses of the battering parents are all there, recorded some one hundred and twenty years ago.

In the second part of Tardieu's paper, the details of his thirty two cases also provide a wealth of material which is readily seen to be comparable with modern descriptions of non-accidental injury, albeit diluted with equally tragic cases of starvation, sadistic privation, restraint and incarceration and much intercurrent infection such as tuberculosis, brought on by neglect and ill-treatment.

DR SAMUEL WEST

Tardieu also mentions the rachitic child, which brings us to the next important paper, this time in the English language. Better known than the Parisian publication, this appeared twenty eight years later, but still very much in Victorian times. Published in the British Medical Journal on April 21st 1888, it was by Dr Samuel West under the title 'Acute periosteal swellings in several young infants of the same family, probably rickety in nature'.⁷

Of course, as with Tardieu, Dr West had no recourse to radiology, Roentgen's discovery being another seven years in the future. His paper was a transcript of a clinical meeting concerning the differential diagnosis of several infants with limb lesions. The main thrust of the discussion concerned the relative merits of scurvy, syphilis or rickets as the most likely explanation. Nowhere was the possibility of trauma, parental or otherwise, allowed. In fact, it was said that 'greenstick fracture or injury must be excluded', though the ground for this decision were not mentioned.

Dr West described an infant of five weeks with swellings on both humeri and a femur. These were periosteal and around the mid-shaft. After three months treatment with cod-liver oil, they had vanished, though the success of the treatment may well have been coincidental if the abnormalities were due to injury. In addition to this child, which was the fifth in the family, three others had had similar lesions when younger, but another child was never affected.

Another case was seen in a cousin - a child of the father's brother. This was an infant girl of two weeks, who again had developed a swelling on the left humerus, which lasted for a month. Two other siblings had never been affected, but an older brother had had both arms and legs involved in a similar fashion at about the same tender age. None of the

cases exhibited any signs of syphilis and Dr West felt that they were all due to acute rickets.

However, rickets was said to be very rare at so young an age and other participants at the meeting felt that this could not be the true explanation. It was said that the special features in Dr West's cases were - 'firstly, the very early appearance of the bone lesions, in one case within a week of birth. Secondly, the repeated occurrence within the same family.'

A Dr Barlow said that neither could scurvy be implicated giving his reasons. He then gave a significant description of the lesions - 'The local bone lesions were dependent on haemorrhage between the bone and periosteum, commencing at the area of junction of shaft with epiphysis and sometimes separating the whole length of the diaphysis or leading to fracture just above the epiphyseal line'. This would appear to be a good description of the radiological appearances of many an undoubted case of child abuse.

Dr Barlow also thought that the most probable explanation of the strange lesions was that they were greenstick fractures with some callus around them, but he attributed them to intra-uterine rickets which predisposed to easy fracture.

Several other doctors recounted similar cases, several with some haematuria associated with tender limb bone swellings. A Dr Omerod drew attention to the fact that Dr West's cases affected relatives in different, but related families and that this, unless it were a coincidence, did not harmonise with the theory that the lesions were either rickets or syphilis. A Dr Parker noted the multiplicity of the lesions and in seeking for a name for the disease, 'this multiplicity was of great importance'. Mr Parker further could not agree that scurvy had anything to do with the disease under discussion. It was also quite new to him to hear of periosteal complications in rickets; the bones suffered commonly, but only at the epiphyseal parts of the diaphysis. 'The cases were doubtless peculiar, but the peculiarity was due to some very special personal or family idiosyncrasy of the subjects attacked'.

This paper is interesting because of the considerable doubts about the true diagnosis in the numerous cases quoted by Dr West and other participants at the meeting. They only considered natural disease in the form of rickets, scurvy or

syphilis, none of which fitted the clinical picture satisfactorily. It is impossible with hindsight alone, without radiology or other modern investigations, to label these children's lesions correctly. But trauma must be added to the differential diagnosis - and such trauma, especially where multiple both in the individual child and within the family, almost certainly raises the spectre of battering.

I have shown West's paper to Professor Ken Evans, Professor of Diagnostic Radiology at the University of Wales College of Medicine and co-author of our book 'Forensic Radiology'. He is of the opinion that the descriptions are quite unlike either scurvy or rickets and that child abuse must certainly be considered.

COT DEATHS AND THE BIBLE

Finally, I cannot resist mentioning two other references which though admittedly well outside the main-stream of the literature on child abuse, can just be brought legitimately into the historical context. In the last year or so, some controversy has been aroused in the medical press about the relationship of child abuse to the sudden infant death syndrome. Indeed, very recently a well-known medical magazine was taken before the Press Council because of complaints that the two conditions were associated by them in what was alleged to be an offensive fashion. Certainly, at least one authority on both topics maintains that there is a close association and that a significant number of cot deaths are 'mildly-battered babies'. Though this is a view to which I personally do not subscribe, it is true that there is an overlap in terms of age, social class incidence and housing standards.

With this as my excuse, I can return to the historical aspects. One of the oldest references to sudden, unexpected death in infancy is not 19th century, but more like ten centuries B.C. I refer to the description in The Old Testament [Chapter 3, First Book of Kings] where Solomon has to adjudicate between the claims of two women over the motherhood of a single infant. The reason for the dispute was that the two women had each given birth to a baby, one three days before the other. At a date not specified, one woman awoke to find her baby dead, 'Having overlain it in the night' and she surreptitiously substituted it for the

other woman's live infant.

This was obviously the 'sudden infant death syndrome', the invariable explanation until recent years being 'overlaying' or suffocation by the mother during sleep. In the Authorised Version of the Bible, it appears at first sight that the age of the baby was three days, which of course would make SIDS unlikely, as it is rare before two to three weeks. However, on closer examination it is obvious that the three days refers to the difference in ages between the two infants, their actual age at the time of death being undisclosed.

A REPORT BY GERALD THE WELSHMAN

A similar, but more recent historical reference to sudden infant death is given in The Itinerary Through Wales written by Gerald de Barri in the late 12th century.

Gerald, better known as Giraldus Cambrensis, Gerallt Cymro or Gerald the Welshman, was Archdeacon of St Davids and accompanied Archbishop Baldwin on his tour of Wales in 1188, which was a recruiting drive for the Third Crusade. When they reached Cardigan in West Wales, Baldwin preached his sermon and a number of men came forward to volunteer. 'But a wife in the crowd publicly and audaciously seized hold of her husband by his cloak and girdle and prevented him going to the Archbishop to take the Cross.'

Three nights later, she woke up suddenly after a frightening dream and on falling asleep again, accidentally smothered her infant son 'whom with more affection than prudence, she had brought into her own bed', again a sympathetic description of overlaying.

After these slightly peripheral quotations, I will finally remind you again of the 19th century papers and round off with a final Latin tag, which also happens to be the motto of the International Reference Organization in Forensic Medicine:- "NIHIL NOVUM SUB SOLE . . . Nothing new under the sun."

REFERENCES

1. Caffey, J. 'Multiple fractures in the long bones of infants suffering from chronic subdural haematoma' Am. J. Roentgenol. 1946, 56(2), 163-73.
2. Caffey, J. 'Some traumatic lesions in growing bones other than fractures and dislocations. Clinical and radiological features' Brit. J. Radiology 1957, 30, 225-38.
3. Ingraham, F.D. and Heyl, H.L. 'Subdural haematoma in infancy and childhood' J. Am. Med. Ass. 1939, 112, 198-204.
4. Silverman, F.N. 'The roentgen manifestations of unrecognised skeletal trauma in infants' Am. J. Roentgenol. 1953, 69(3), 413-26.
5. Toulemouche, M. 'Considerations médico-légales sur deux cas assis rares d'aberration mentale' Ann. Hyg. Pub. Méd. Lég. 1853, t.L, 424.
6. Tardieu, A. 'Étude médico-légale sur les services et mauvais traitements exercés sur des enfants' Ann. Hyg. Pub. Méd. Lég. 1860, 13, 361-98.
7. West, S. 'Acute periosteal swellings in several young infants of the same family, probably rickety in nature' Brit. Med. J. 1888, 1, 856-7.

'THE ENGLISH DISEASE': INFANTILE RICKETS AND SCURVY IN PRE-INDUSTRIAL ENGLAND

Valerie A. Fildes

'No distemper is more frequent in infants than the rickets.'¹ The physician Sir John Floyer in 1706 was voicing the view held by physicians, surgeons, nurses and parents in 17th and 18th century England: rickets was common; its signs and symptoms were well-known; and it was the principal disease of infancy. In the 19th and 20th centuries rickets, often with some degree of scurvy, was seen as the disease accompanying industrialisation and urbanisation, occurring particularly in the smoky manufacturing towns of Northern Europe and North America.² But rickets was a long established condition. It was described by Soranus of Ephesus in Rome in the 1st century A.D.,³ and evidence of its existence has been found in ancient human remains.⁴ 'Madonna and child' paintings of the Dutch School in the 15th and 16th centuries depict children with the enlarged head, bowed legs and deformed chest of rickets; indicating that it was not an uncommon condition in the towns of Northern Germany and Holland.⁵

THE NEW DISEASE AND ITS NAME

In 1582 a Swiss physician, Hieronymus Reusner, described a disease which 'had long been known in Switzerland and Holland', 'It was peculiar to little children, and they became so weak that they could hardly support themselves on their limbs . . . their ribs were crushed in, and their legs curved on the inner side, whence in Denmark they call it varum.'⁶ The French surgeon Jacques Guillemeau, described its symptoms in connection with diet in his Treatise of the

Diseases of Infants, published in 1609 and translated into English in 1612: 'to give him any other nourishment, then milk and dish-meate, before he hath teeth . . . might . . . cause the child to have bunches, or contusions, about his backbone and ribs'.⁷

The major and definitive descriptions of rickets were published in England, or by Englishmen, in the mid 17th century; and, strangely, they all described it as a new disease which began to be noticed about 1620. The first was the inaugural thesis presented at Leyden by Daniel Whistler, a young English physician, in 1645. Published in Latin, its title on translation reads The Children's Disease of the English, which the Inhabitants Idiomatically call The Rickets. Although brief, this gave a competent and thorough description of the disease, its prognosis, and some suggested treatments. He said that:

'It is some twenty-six years or thereabouts since it was first recognised in England, and its name, the Rickets, is said to have been adopted from the surname of an empiric who first cured it. Others insist that the name arose as a country colloquialism from the neighbourhood round Dorchester, where those who have difficulty in inspiring . . . are . . . said "to rucket".'

Whistler suggested a more suitable name would be paedosplanchnosteocaces. Although Whistler has been accused of plagiarising the ideas of his contemporary, Francis Glisson, his work remains the first description of the disease published in any language.⁸

In 1649, the English physician Arnold Boate or Boot, physician to the Earl of Leicester and who practised in Dublin, devoted the twelfth chapter of his medical textbook to the disease tabes pectora. This appears to have been his own naming for rickets, of which he gave a short concise description, based on clinical observation and post-mortem examinations. He said that the disease was common in both England and Ireland and that the English called it 'doubling of the joints' or 'tent' but more generally 'the rickets'.⁹ Boot's brother, Gerard, physician-in-ordinary to Charles I, completed a book in 1645 entitled Ireland's Naturall History, which contained an account of this disease.

'Among the reigning diseases of Ireland the rickets also may with good reason be reckoned, a disease peculiar to young children, and so well known to everybody in England, as it is needless to give any description of it . . . In Ireland this disease is wonderful rife now, but it hath nothing neer been so long there as in England, either through the unskilfulness or neglect of the physicians . . . or that really it is new there, and never before having been in Ireland, hath got footing in it only within these few years.' ¹⁰

Another publication which shows that rickets was well known and widespread prior to 1650 was the Reverend Thomas Fuller's Good Thoughts in Bad Times of 1647. A section entitled 'A New Disease' relates 'There is a disease of infants [and an infant disease, having scarcely as yet gotten a proper name in Latin] called the rickets; wherein the head waxeth too great, whilst the legs and lower parts wain too little'. ¹¹

In 1650 came the definitive medical description De Rachitide by Francis Glisson, which was translated into English in the following year as A Treatise of the Rickets, being a Disease Common to Children. This work was the product of a collaborative study by eight members of the College of Physicians over a period of five years but, acknowledging the original and major work was done by Glisson, it was published under his name. This also contained the first account of infantile scurvy which, in a period when scurvy was endemic in England, often accompanied rickets. Glisson thought scurvy was a separate entity which could be present with the rickets, but was not a necessary part of the syndrome.

Like Whistler, Boot, and Fuller, Glisson described rickets as a new disease which, he says, began 'about thirty years since, in the counties of Dorset and Somerset, lying in the Western part of England, since which time the observation of it hath been derived unto other places, in London, Oxford, Cambridge and all the southern and western parts of the kingdom; in the northern counties this affect is very rarely seen, and scarcely . . . known among the vulgar sort of people'. ¹²

Two further works in the same period also claimed it as a new condition. In 1659 James Primerose, who practised in Hull, said that the name rickets was first given in the town of Southampton in 1628 and claimed that he had observed the disease in Yorkshire in the same year, when the name was not yet known there.¹³ Two years later John Bird published in London his Ostenta Carolina in which he promoted the cause of Charles II as a healer, by the Royal Touch, in the Rekets and the King's Evil. He attempted to link the presence of rickets in England with the absence of Divine Grace in the form of Charles II, and said that:

'one thing more must not be forgotte [that] . . . the time when that disease first seized upon children in this kingdome, and had that name of Rekets given unto it. It was the third year of our Royall Sovereign's Nativity [1633], or the next unto it, when the weekly Bill of mortality mentioned one to have been buried of the Rekets in the moneth of May.' ¹⁴

This fact was later confirmed by the early demographer John Graunt, who stated that 'of the rickets we find no mention among the casualties, until the year 1634'. ¹⁵

AETIOLOGY

After 1634, in which 14 deaths were ascribed to rickets the number of cases in the monthly Bills of Mortality for London and its environs rose steadily. By 1659, 476 deaths from rickets were listed. And these were designated as cases of the disease not by physicians but by the unqualified 'searchers', whose task was to find the numbers of dead and ascertain the reasons for their death. Between 1655 and 1658 1,598 deaths from rickets were recorded in London, plus 191 from 'liver-grown spleen and rickets'.¹⁶ Some writers associated the disease with the cold damp climate; others linked it with the foul and smoky atmosphere of London, where sea-coal was burnt as a fuel. ^{17,18}

The disease was not confined to the capital. The daughter of Alice Thornton, a gentlewoman of Yorkshire, was a victim; in 1656 she recorded her death at the age of 18 months: 'she had bin long in the ricketts and consumption, gotten first by an ague, and much gone in the ricketts, which I

conceived was caused by ill-milke at two nurses'.¹⁹ The infant son of Sir Simond D'Ewes, of Lavenham in Suffolk, suffered from convulsions for which the aid of physicians was sought but, he recorded, treatments 'having been too violently and unskilfully applied . . . so wasted the young and weak body of the sweet child as it drove him into another disease called the rickets'. The child died in 1636 at the age of 22 months.²⁰ Another victim was the son of Ralph Verney of Claydon in Buckinghamshire. In 1647 his wife wrote 'I must give thee some account of our own babyes heare. For Jack his leggs are most miserable, crooked as ever I saw any child's, and yett thank god he goes very strongly, and is very straye in his body as any child can bee; and is a very fine child all but his legges' (and she linked this to the diet he was receiving from his nurse) 'truly I think it would be much finer if we had him in ordering, for they lett him eat anything he hath a mind toe, and he keepes a very ill diett'. Sir Ralph replied 'Truly the crookedness of his leggs grieves my very hart, aske some advice about it at London, but doe not tamper with him'.²¹

These examples, all from wealthy and established families, demonstrate what Glisson and all other medical authors of the period noted: it was the children of the aristocracy and higher gentry who suffered most frequently and most severely.²² Some of the poorest infants (foundlings and some parish children) also contracted rickets, but those from the poor and middle ranks of society remained unaffected. Physicians put this down to the fact that wealthy children were put out to wet nurses in the country and that it was 'ill-ordering' by these women that resulted in their having crooked legs. A study of infant feeding practices has shown that physicians thought rickets, with or without scurvy, could be contracted by contact with, or exposure to, a diseased wet nurse, or that it was transmitted by her milk.²³ Its occurrence was also linked with mixed or supplementary feeding,²⁴ and particularly with weaning from the breast.²⁵ Glisson said 'this disease doth very rarely invade children presently after their birth, or before they are six months old . . . but after that time it beginneth by little and little daily to rage more and more to the period of eighteen months' . . . when it rests 'till the child be two years and six months old'. After that the disease 'seldom invadeth the child'. The absence of the disease in very young infants was, he believed, related to 'the wholesomeness of the diet; for breast-milk is the most salubrious and agreeable nourishment, easie to concoct, and

friendly and familiar to the constitution of infants'. As long as infants received breast milk they would do well, provided their nurse did not become pregnant or addicted to venery, drunkenness or gluttony.²⁶

After the ninth month, Glisson said, 'children usually are fed with other aliment besides breast milk or other milk, and from that variety in feeding there easily resulteth some errors in point of diet'. He also linked the onset to the removal of the child's swaddling clothes before some children were strong and active to bear the cold on their limbs. [It should be noted here that one of the functions of swaddling was to make the child's limbs grow straight and, by the warmth and swathing, to avoid deformities such as rickets.] Allowing the child to exercise too early, and especially encouraging it to walk before it was ready, was thought to cause rickets. Medical and other advice books for parents repeatedly warned that children should not be allowed to stand or walk too early.²⁷

One reason for blaming the wet nurse for causing rickets was that wealthy infants, who appeared normal when they went away to nurse, only began to show the signs of rickets whilst they were away at nurse, at 6-9 months old when they began to walk, to teeth, and to receive a mixed diet. By the time they were ready to return to their parents the deformities were obvious to all. The reported high incidence among rich families was not only due to its being diagnosed more frequently by physicians, who were expensive and not usually consulted by poorer families, but was undoubtedly related to their diet and mode of life. The diet of the middle and lower ranks of English society usually contained dairy foods, particularly cheese, and in the north of England milk was used as a drink whereas in the more affluent south it was not.²⁸ In contrast, the diet of the wealthy was based upon meat, and milk was considered a drink only for unweaned infants, invalids, and the aged.^{29,30}

Another factor was the difference in child-bearing habits. Wealthy families who put their children out to nurse, and wanted as many children as possible to ensure they had heirs to inherit land or property, had many more infants, more frequently. It was not uncommon for wealthy women to have up to twenty or thirty children,³¹ whereas the average number of offspring per family in England at this time was four or five.³² Constant and frequent childbearing among

women whose diet included few sources of vitamin D and calcium, and was probably deficient in vitamins A and C during the winter months, would result in a depletion of her vitamin A and D stores and produce infants who either had mild rickets or were predisposed to it. Some wet nurses to whom these children were sent, breastfed successively for several years after their last child was born.³³ As the vitamin content of breast milk depends on the diet of the nurse,³⁴ a wet nurse who had insufficient in her diet, and fed one or more infants for a long period may well have had milk which was deficient in these and other substances. She might also have supplemented her milk by giving bread and water pap and other foods which were lacking vitamins D and C.³⁵ In addition, richer children were cosseted and kept well wrapped up in warm nurseries, whereas less fortunate children were exposed to the elements much sooner, and played in the open air from an early age, so that even if their diet was deficient some exposure to sunshine in the summer months could have averted frank rickets.

What is difficult to explain is the underlying assumption in many accounts that, whatever the treatment, these children appear to have recovered from the rickets after the age of about three years; although its effects on girls at least remained and became obvious when they grew to maturity and attempted to bear children.^{36,37} The daughter of Edward Clarke, who was the Member of Parliament for Taunton, became affected whilst at nurse in Ditton. He visited her in 1696 accompanied by the philosopher and physician Dr Locke. He reported to his wife that he found Jenny 'very lively and brisk delighting to be on her feet but indeed with very little strength to use them. The disease has afflicted her legs and has made them crooked "as is usual in all cases of the ricketts". Mr Locke and he had seen Jenny undressed and had carefully examined and viewed all parts of her body and found the "knobs on her ribbs are more on one side than the other". In fact the disease has affected one side more than the other of the child's from head to foot. Mr Locke considers Jenny will recover her strength and will out grow it in time'. And this was indeed the case.³⁸

SEVENTEENTH CENTURY TREATMENTS

Several treatments were advocated and given in the 17th century. A large number of simples, made from herbs and administered in drinks such as ale or broth, were prescribed.³⁹ If scurvy was suspected then fresh scurvy-grass, brooklime and cresses were added to the mixture.⁴⁰ Purges and/or clysters were also advised for costiveness.⁴¹ Moderate exercise for the limbs and the whole body were always prescribed and these ranged in vigour from simple rocking to swinging the child from person to person, although caution was advocated.⁴² One 18th century physician said that he had seen 'great cruelty used by nurses in the ricketts, by violently shaking the child and putting it to great pain'.⁴³

Regular rubbing and massage particularly of the back and affected limbs was advised and gentle swathing and/or splinting of the limbs.⁴⁴ Deformities of the spine could be corrected by special 'jackets' or 'corsets' and a 'breastplate' made of whalebone could be used to support the chest.⁴⁵ Care was to be taken when using these so that they did not rub or hurt the patient. Special boots which supported the feet and were designed to prevent outward rolling of the ankles were described by Glisson and later writers. These are known to have been used to treat Charles I who as a child suffered severely from rickets. His boots survive in the costume collection of the London Museum. It is interesting that, although his illness is well-documented, all signs of rickets have been deleted from his portraits.⁴⁶ The physician Edward Baynard described these attempts to cover evidence of the disease among the king and his courtiers at a time when, he said, it was 'almost epidemic . . . few families escaping it; especially those that were rich and opulent, and put their children out to nurse . . . hence, with the growing infant grew up, the boot fashion for the men and long coats for the women; for they were so ashamed at their crooked leggs, that they wore boots to hide them. And this beginning at court [among the Quality] the straight-legg'd fools must follow the fashion'.⁴⁷

EIGHTEENTH CENTURY TREATMENTS

A further treatment, which began to be advocated in the first years of the 18th century, was cold bathing. This was advised and widely used for rickets and some wells and springs, such as St Mungo's Well near Newcastle, became especially associated with the cure of the disease.⁴⁸⁻⁵⁰ Other treatments, were not medically prescribed but generally used in certain parts of the country. In Norfolk people caught ravens to collect the liver of the bird which was given to sufferers with good effect.⁵¹ And fisher-folk in the North of England and parts of Scotland gave the livers of fish such as skate as a cure.⁵² The use of cod liver oil came into medical use in the 1780's after Thomas Percival had seen it used to good effect in the treatment of rheumatic complaints in the Manchester Infirmary. At first it was used externally by rubbing into the affected parts but, by the early 19th century, it was beginning to be administered orally.^{53,54}

INCIDENCE AFTER THE EIGHTEENTH CENTURY

During the affluent years of the 18th century the occurrence of rickets and scurvy apparently decreased,⁵⁵ but by the end of the century it was beginning to increase in incidence, especially in London, and became associated with the removal of families from the countryside to the manufacturing towns.⁵⁶ At this time, with the coming of industrialisation and the change from country living and work, came also a slow change in family size and infant care. Wet nurses were now less frequently used by the wealthy; well-to-do women were more likely to breast feed their children and superintend their clothing and diet.^{57,58} Poorer women, now expected to work long hours in factories, were no longer able fully to breast feed their babies and used unsuitable substitutes wholly or partially to raise them by hand. Without the contraceptive effect of continuous and frequent breast feeding,⁵⁹ poorer women tended to have larger families who had to be reared in small and enclosed environments. Thus the 19th and 20th century picture of rickets emerged: no longer a disease of the rich and privileged, but a disease affecting the urban poor.

ACKNOWLEDGEMENTS

Research for this paper was supported by the Wellcome Trust and The Nestlé Co. I wish to thank the staff of the Library of the Wellcome Institute for the History of Medicine, London; The British Library, London; University of London Library, Senate House, for their interest and assistance in this research.

REFERENCES

1. Floyer, J. The History of Cold Bathing: both ancient and modern. Part 1, 2nd Edn, London, 1706, 80.
2. Loomis, W.F. 'Rickets' Scientific American 1970, 223, 77-91.
3. Soranus' Gynecology, Translated by Temkin, O. et al., Baltimore: Johns Hopkins, 1956, 115.
4. Zivanovic, S. Ancient Diseases. The elements of palaeopathology, London: Methuen, 1982, 109-21.
5. Foote, J.A. 'Evidence of rickets prior to 1650' Am. J. Dis. Child. 1927, 34, 443-52.
6. Still, G.F. The History of Paediatrics, London: Oxford University Press, 1931, 156-8.
7. Guillemeau, J. Childbirth or The Happie Deliverie of Women . . . To which is added a treatise of the diseases of infants and young children: with the cure of them, Anon. Translation, London, 1612.
8. Smerdon, G.T. 'Daniel Whistler and the English disease: a translation and biographical note' J. Hist. Med. 1950, 5, 397-415.
9. Van Andel, M.A. 'Arnoldus Boot author of one of the first descriptions of rickets [1649]' Janus 1927, 31, 347-58.
10. Hess, A.F. Rickets Including Osteomalacia and Tetany, Philadelphia: Lea & Febiger, 1929, 28.
11. ibid., 28-9.
12. Glisson, F. A Treatise of The Rickets, Being a Disease Common to Children, Translated by Armin, P., London, 1651.
13. Still, G.F. op. cit., 248-50.
14. Hunter, R.A. and MacAlpine, I, 'John Bird on "Rekets" [London 1661]' J. Hist. Med. 1958, 13, 397-403.

15. Graunt, J. Natural and Political Observations on the Bills of Mortality, 5th Edn, London, 1676.
16. Hess, A.F. op. cit., 32.
17. Hoffmann, F. A System of the Practice of Medicine, Translated by Lewis, W., London, 1783, Vol. 2, Chapter 9. [Written c 1740]
18. Rosen von Rosenstein, N. The Diseases of Children and Their Remedies. Translated by Sparrman, A., London, 1776, 268-320.
19. Thornton, A. The Autobiography of Mrs Alice Thornton of East Newton, County York, Jackson, C. [ed.] Durham: The Surtees Society, 1875, 94.
20. D'Ewes, S. The Autobiography and Correspondence of Sir Simond D'Ewes. During the reigns of James I and Charles I, Halliwell, J.O. [ed.] London: Richard Bentley, 1845, 2, 144.
21. Drummond, J.C. and Wilbraham, A. The Englishman's Food. A history of five centuries of British diet, Revised Edn, London: Johnathan Cape, 1957, 158.
22. Glisson, F. op. cit., 170.
23. Fildes, V.A. The History of Infant Feeding 1500-1800, Unpublished Ph.D. thesis, University of Surrey, Dept. of Human Biology and Health, 1982, 196-204.
24. ibid., 263-68.
25. Fildes, V. 'On the bottle again. The diseases of weaning 1600-1800' Nursing Mirror, 1980, 151, 18-21.
26. Glisson, F. op. cit., 194.
27. ibid., 195.
28. Drummond, J. and Wilbraham, A. op. cit., 157-9.
29. ibid., 158.
30. Muffet, T. Health's Improvement, London, 1655, 119-26.

31. McLaren, D. 'Nature's contraceptive. Wet nursing and prolonged lactation: the case of Chesham, Buckinghamshire 1578-1601' Med. Hist. 1979, 23, 426-41.
32. Laslett, P. The World We Have Lost, London: Methuen, 1971.
33. McLaren, D. op. cit.
34. McCance and Widdowson's The Composition of Foods, Revised and extended by Paul, A.A. and Southgate, D.A.T., London: HMSO, 1978.
35. Fildes, V. Thesis op. cit., 216-68.
36. Willughby, P. Observations in Midwifery. As also the country midwife's opusculum or vade mecum, 1630-69, Blenkinsop, H. [ed.] Warwick, 1863.
37. Shorter, E. A History of Women's Bodies, London: Allen Lane, 1982, 22-8, 83-91.
38. Sherren, M. 'Edward and Mary Clarke of Chipley' in Studies in Somerset History, University of Bristol, Dept. of Extra-mural Studies, 1971, 45-53.
39. Glisson, F. op. cit., 322-47.
40. ibid., 334.
41. ibid., 332-6.
42. ibid., 358-60.
43. Denman, T. and Osborne, W. Notes Extracted From Several Courses of Lectures in Midwifery, Library of The Wellcome Institute for the History of Medicine, MS 2099, 1777-1978, 325-6.
44. Glisson, F. op. cit., 318, 364.
45. ibid., 321.
46. Keevil, J.J. 'The illness of Charles, Duke of Albany [Charles I] from 1600 to 1612' J. Hist. Med. 1954, 9, 407-19.

47. Baynard, E. The History of Cold Bathing. Both ancient and modern. Part II, London, 1706, 148-9.
48. Floyer, J. op. cit., 129-30.
49. Halsband, R. [ed.] The complete letters of Lady Mary Wortley Montague, Oxford: Clarendon Press, 1965, 1, 209-44.
50. Underwood, M. A Treatise on the Diseases of Children, London, 1784, 121-3.
51. Drummond, J.C. and Wilbraham, A. op. cit., 159.
52. Cone, T.E.C. 'The first report of the value of fish liver oil as a cure for rickets' Pediatrics 1967, 40, 183.
53. Percival, T. 'Observations on the medicinal uses of the oleum jecoris aselli, or cod liver oil, in the chronic rheumatism, and other painful disorders' London Med. J. 1782, 3, 392-401.
54. Hess, A.F. op. cit., 401-6.
55. Drummond, J.C. and Wilbraham, A. op. cit., 271-3.
56. Underwood, M. op. cit., 119-20.
57. Trumbach, R. The Rise of the Egalitarian Family, New York: Academic Press, 1978.
58. Fildes, V. Thesis op. cit., 75-148.
59. ibid., 89-92.

NEONATAL TETANUS; A MAJOR DISEASE OF THE SCOTTISH ISLANDS

Richard A. Collacott

Neonatal tetanus is now exceedingly rare in the United Kingdom. However, in the 18th and 19th centuries, neonatal tetanus was a common condition in the islands which lay off the west coast of Scotland, and led to considerable mortality. In these communities, the high neonatal mortality rate from tetanus led to a failure in the natural increase of these communities, and contributed alongside marked social upheaval and its associated emigration, to their depopulation.

Neonatal tetanus was prevalent in Iceland, the Westmann Islands, the Faroes¹ and Greenland² during the 18th and 19th centuries. In Iceland there were 4478 infant deaths from tetanus between 1827 and 1937, representing some 30% of the total deaths.¹ In the Shetland and Orkney Islands, if the disease occurred, it was not in such numbers as to excite comment.³ However, neonatal tetanus was a major problem in the Inner and Outer Hebrides.

THE HEBRIDES

In the Hebrides, neonatal tetanus was a prominent cause of death at the end of the 18th century, as is shown by various entries in the old Statistical Account of Scotland. In compiling this most important source, the minister of every parish in Scotland was asked to submit details of the most prevalent diseases in his parish.

The Rev. Colin Mackenzie, the minister for Stornoway, Isle of Lewis, wrote:

'The only local and peculiar distemper prevalent in this parish is a disorder which seizes newborn infants about the fifth night after their birth, and carries them off with convulsive fits.' 4

The Rev. Donald Macdonald of the parish of Barvas, Isle of Lewis wrote:

'Many infants die of a complaint called the five-nights' sickness, from their dying of it upon the fifth or sixth night; there are no instances of any who have been seized with it that escaped, nor has the nature of this uncommon disease yet been fully comprehended by the most skilful upon this island.' 5

The Rev. Hugh Monro, from the parish of Uig, Isle of Lewis wrote:

'The most prevailing distempers are rheumatism, erysipelas, cholics and epilepsy among infants from the fifth to the eighth day after their birth; if they are not affected with the disease before the eighth day, they are not afterwards subject to it. The surgeon in this country declares that the last mentioned distemper proved fatal in every case which came within his comprehension, two only excepted, in which the surgeon attended . . . the distemper prevails over all the island.' 6

The Rev. G. Stuart for the parish of Kilbride in Arran wrote:

'There is a disorder, no less fatal to children, which seems peculiar to this island, as it is seldom known anywhere else, called the eight-day sickness. Infants are seized with it, the eighth day after birth, by the falling down of the jaw, attended with violent convulsions. No means have yet been found effectual to remove this disorder.

Much of the cause is ascribed to unskilful midwives.' ⁷

The Rev. John Hamilton for the parish of Kilmory, also on the Isle of Arran, wrote:

'The diseases here are cancers, rheums, fevers brought from other countries, and a great death of newborn infants by the falling down of the jaws; and some women die in childbed, both which last two are attributed to the unskilfulness of midwives, who venture upon the practice from natural courage without necessary and proper knowledge, there being no one duly qualified in the island.' ⁸

A further entry in the old Statistical Account of Scotland suggests that neonatal tetanus was also prevalent in the islands of Jura and Colonsay. ⁹

ST KILDA

The literature concerning neonatal tetanus in the United Kingdom mainly concerns the island of St Kilda, an outlier of the Outer Hebrides, and has been described elsewhere in detail.^{10,11} The island of St Kilda lies in the Atlantic Ocean, some forty miles to the west of the Isle of Lewis. In his diary for December 12th, 1886, George Murray, the island's schoolmaster states:

'Last night at 10.30, after six days intense suffering, the child departed this life. Every one expressed great wonder how it lived so long after being seized with the illness, as they generally succumb at the end of a week after they are born. This one was thirteen days except one and a half hours. It had a frequent cry since it was born; but the first signs of its being dangerously ill was at the end of a week, when it ceased to suck the breast, but still sucked the bottle. The following day, 'thuit na gialan' [the jaws fell], when all hope of its recovery was given up. From that time till its death, it occasionally took a little milk in a spoon or out of the bottle. The last two days a

little wine in water was given once or twice. It very often yawned and sometimes looked hard at you. It was pitiful to see the poor little thing in the pangs of death. May God prepare us all for the same end.' 12

When the child was buried, Murray said:

'In the grave which was opened, I saw the coffin of its two little brothers that died the same way. The one coffin was still quite whole, there being only about sixteen months since it was interred.' 12

Neonatal tetanus was not described at all by the earliest chroniclers of St Kilda, Martin and Buchan. The first description was by the Rev. Kenneth Macaulay who in 1764 wrote:

'The St Kilda infants are peculiarly subject to an extraordinary kind of sickness; on the fourth, fifth or sixth night after their birth, many of them give up suckling; on the seventh, their gums are so clenched together that it is impossible to get anything down their throats. Soon after this symptom appears, they are seized with convulsive fits, and after struggling against excessive torments, till their little strength is exhausted, die generally on the eighth day. I have seen two of them expire after such agonies.' 13

Morgan described the thirty years' experience of the island's untrained midwife: 14

'At the time of the birth, there was no appreciable physical inferiority on the part of those infants who were so prematurely and suddenly selected as a prey. "They were all proper bairns", and so continued till about the fifth or sixth day. The mother's eye might then not infrequently observe on the part of her child a strange indisposition to take the breast. The import of this first premonitory symptom is well understood; sooner or later it is succeeded by a great

restlessness, while all the symptoms are exacerbated when the child attempts to swallow. At the same time, involuntary twitching along the course of the muscles, sudden and violent starts, and in certain cases, a peculiar and piercing shriek, often heard as the child seems dozing, plainly indicate a serious disturbance of the nervous system. The lower extremities are usually the next to become involved, the legs being violently and spasmodically drawn up, and the toes flexed. The back is sometimes rigid and stiff, while in other cases it is affected with sudden and acute opisthotonic seizures. The state of the jaw is equally variable, in some instances it may be literally spoken of as locked, and when this is the case the sickness is much less interrupted by violent and often-recurring spasmodic paroxysms, than in other and more numerous cases in which this organ seems relaxed, its directing nervous influence paralysed and dead, while the muscles feel soft and flabby. To this relaxed condition of the jaw my informant apparently attached marked significance, for on referring to it she used these words: "When once the jaw falls we lose hope, I have never seen a child come round when that happened." In one of the spasms which in so remarkable degree attend this particular state of the jaw, the strength of the little sufferer fails, and death closes the scene in from thirty to seventy hours after the first premonitory symptom.' ¹⁴

The St Kilda parochial register^{15,16} embrace the sixteen year period between 1830 and 1846. There then follows a break of ten years until 1856 when St Kilda was formally constituted as a registration district. From this time until the island's evacuation in 1930, civil records^{17,18} are therefore available. An examination of these records demonstrates the enormously high neonatal mortality rate prevailing on the island until the first decade of the twentieth century. [Neonatal mortality rate is defined as the number of live-born infants who die under the age of twenty-eight days, per thousand live births.]

Table 1

NEONATAL MORTALITY RATE, St KILDA, 1830-1930

Date	No. live births	No. of deaths under 28 days	Neonatal Mortality Rate
1830-1839	61	35	573.8
1840-1849 [Incomplete data]	5	0	-
1850-1859 [Incomplete data]	11	5	454.5
1860-1869	29	20	689.7
1870-1879	28	14	500.0
1880-1889	27	14	518.5
1890-1899	25	6	240.0
1900-1909	15	2	133.3
1910-1919	17	1	58.8
1920-1929	7	0	-

An analysis of 99 of these neonatal deaths shows that the mean age of death was 9.4 days, with a mode of 8 days. This is shown in Figure 1.

Such high neonatal mortality rates hit some families particularly badly. Murray writes: ¹²

'On looking through the churchyard, I felt sad at the sight of so many infant graves. One man, not yet fifty, I should say, pointed the place to me where he buried nine children. He is left with four of a family. Another buried no less than a dozen infants, and is left with two.'

The high mortality from neonatal tetanus was met with passive acceptance by the St Kildans. Connell¹⁹ records one St Kildan's reaction:

'If it's God's will that babies should die, nothing you can do will save them.'

Sands recounts that he heard:

' . . . more than one pious gentleman suggest that this distemper was probably a wise provision of providence for preventing a redundant population on a rock where food was limited.' ²⁰

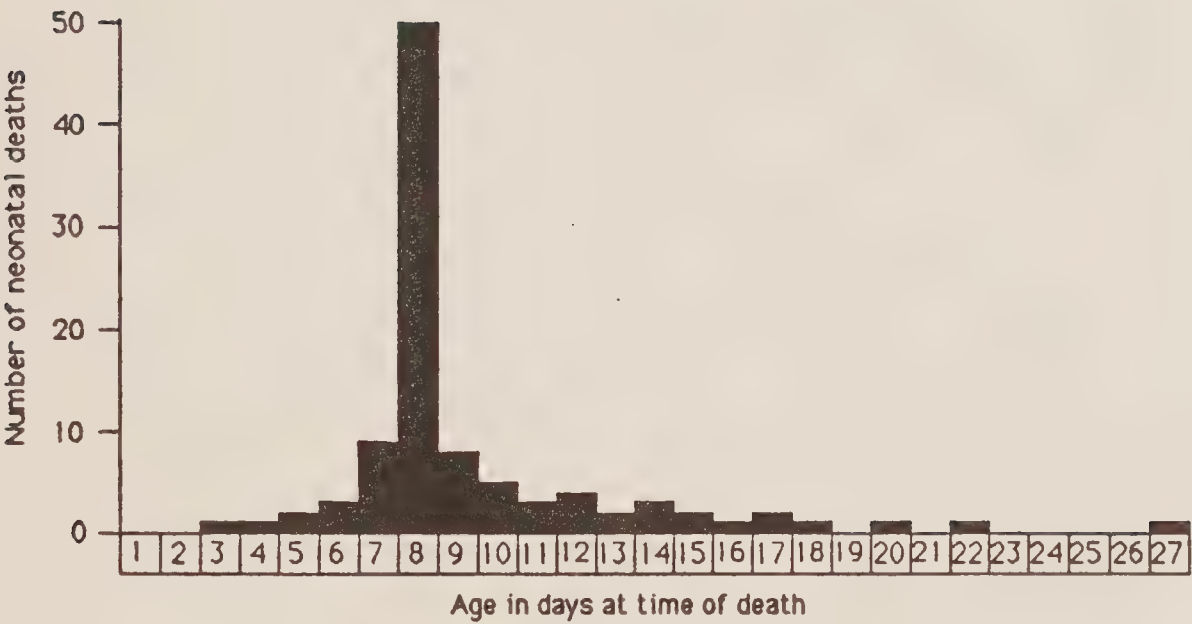
MacCallum records:

'I met a gentleman some time ago who knew about this heavy death rate among the children, and strongly asserted that the removal was a providential arrangement to prevent overpopulation.' ²¹

The St Kildans were so accustomed to the death of their infants, that they neglected to provide clothes for their babies until after the danger-period.^{22,23} Some expectant mothers however, avoided the risk of tetanus by leaving St Kilda in late pregnancy, to go to the Island of Harris for their confinement, where the risk of tetanus was lower. ^{17,20}

Figure 1

AGE AT TIME OF DEATH FROM NEONATAL TETANUS:
ST KILDA 1830-1930



HISTORICAL IDEAS CONCERNING THE AETIOLOGY OF NEONATAL TETANUS

Many speculative ideas concerning the aetiology of neonatal tetanus were propounded during the 19th century. The diet of the expectant mothers, being oily, and based on the flesh of seabirds, was commonly suspect,^{14,24,25} and was believed to inhibit lactation. Improper feeding of the infant was frequently incited.^{20,26} Connell describes the administration of raw whisky and port-wine to infants a few days old.¹⁹ Ross felt that the prevalent custom of delaying putting the infant to the breast for two or three days after birth was responsible.²⁶

The home environment was also incriminated. Writers blamed the smoky atmosphere and bad ventilation inside the houses.^{1,14,24,26} Others thought it was the damp^{1,24} or sudden changes in the temperature.²⁴ Mitchell blamed the lack of light.¹ Bad sanitation and the ubiquitous cow-dung within the houses was frequently considered.^{1,27-29} Birth trauma, with displacement of the cranial bones, and damage to the medulla oblongata was also invoked as a cause,^{24,30} whilst others claimed that the cause was the intermarriage of the islanders.^{31,32} Other writers variously blamed the neglect of bathing the infants on a daily basis, 'mental perturbation' of the mother prior to suckling, and the administration of unsuitable medicines such as castor-oil to the infants.²⁶

Later, less speculative ideas blamed umbilical sepsis or phlebitis as the source of neonatal tetanus.^{2,24,31} Turner believed that the umbilicus became contaminated from the use of communal infant clothing.^{33,34} Details of the care of the umbilicus soon after birth are not known with certainty. Gibson² however, found that in the Hebrides, the umbilicus was encircled with a rag, through which a small hole had been burned after it had been held by tongs in front of the fire. In Lewis, the rag was smeared with salt butter. He considered it likely that in St Kilda, the rag was anointed with fulmar-oil. The fulmar-oil had previously been stored in the dried stomach of a gannet, as a ceremonial unguent for newborn babies by the untrained midwife. He believed that such a container might be a suitable culture medium for clostridia.

It now seems reasonably certain that the unsanitary environmental conditions imposed by the St Kildan style of

housing, with their earth-floors contaminated by faecal material from cattle kept under the same roof, afforded ample opportunity for the infecting organisms. From the relative constancy of the time of onset of the disease, it seems certain that in the great majority of cases, infection was acquired by way of the cord at, or soon after birth.³⁵

This view is supported by the medical officer of the parish of Lochs, in the Isle of Lewis:

'The infantile scourge, according to my experience, is most frequently met with in those dwelling-houses where sanitation in its most rudimentary form is entirely ignored, where we have to walk to the fireplace in the centre of the mud floor through tons and tons of decomposing organic matter or manure.'²⁷

OBSTETRIC CARE IN THE SCOTTISH ISLANDS

The availability of qualified medical and nursing care in the Scottish islands during the 18th and 19th centuries was sparse.^{11,36} There is however a dearth of information concerning the obstetric practices actually given during this period. It seems certain that contemporary medical and nursing skills took a long time to diffuse through to the remoter areas of Scotland, long after they had become standard practices in the growing urban conurbations. It is also apparent that the majority of pregnancies and labours were unattended by medical practitioners until well into the twentieth century. Vignettes of information suggest that most small communities had their untrained but traditional midwife, who was called upon to attend women in labour.

Little however is known concerning their standard of care. We do know that Sir Leslie Mackenzie was informed in the course of some enquiries in the island of South Uist about 1914, that it was the custom to 'put a piece of burnt rag on the cut cord, to truss the baby up tightly in clothes, and neither to wash nor change the child till the fifth day'.³⁷

It is possible to speculate that the standards of hygiene employed by these untrained midwives would be higher in areas well provided with doctors, as presumably, methods of hygiene might be expected to diffuse down from them. It seems not unreasonable to expect that there might be an

inverse relationship therefore, between the prevalence of neonatal tetanus, and the availability and the example of qualified medical personnel.

Ferguson³⁵ has presented evidence to confirm the observation of the medical officer for Ross-shire,³⁸ that neonatal tetanus was uncommon along the east coast of Caithness, Sutherland and Ross-shire. Ferguson studied the birth and death certificates of all children who died on the Isle of Lewis, together with those of some eight parishes in Ross-shire, between the years 1863 and 1899 inclusive. This study represented some 41,308 birth certificates, and some 3,772 death certificates. He showed that whereas the neonatal mortality rate on the east coast of Scotland was 35.2/1000 live births, that for the Isle of Lewis was 44.3/1000 [with a range of 30.4/1000 and 58.7/1000 in different parishes]. He found that 139 deaths for this period were diagnosed as being due to neonatal tetanus in Lewis, whereas there were none with this diagnosis on the east coast. When he examined deaths which occurred between 4 and 14 days of age [when most deaths from neonatal tetanus occur], he discovered a rate of 26.5/1000 in Lewis, compared with only 13.1/1000 in the east coast parishes that he examined. He concluded that neonatal tetanus was indeed less prevalent along the east coast of Scotland, than in Lewis.

An analysis of the original returns to the Royal College of Physicians of Edinburgh during 1852, during their investigation into medical services in the Scottish Highlands and Islands,³⁹ shows the distribution of doctors in these areas. The vast majority of doctors practised from villages situated along the Great Glen Fault, and along the east coast. The number of doctors in practice in the islands, and the west coast were very small. Indeed there were nearly four times as many doctors in practice along the east coast as compared to the west coast of mainland Scotland. Only sixteen doctors in total can be identified as practising in all the islands of the Inner and Outer Hebrides. The lack of communications along the west coast of Scotland added to the isolation of these communities, the majority of which lay along the coastal inlets. It would therefore have been exceedingly difficult for nineteenth century standards of hygiene to have filtered down to the untrained midwives. The situation in St Kilda however, showed that with adequate obstetric care, neonatal tetanus could be prevented.

PREVENTION OF NEONATAL TETANUS IN ST KILDA

In the summer of 1890, the Rev. Angus Fiddes, the minister on St Kilda applied to the Glasgow Sick Poor and Private Nursing Association for a nurse to assist at St Kilda. Mr Fiddes promised to pay her from funds he had collected for that purpose. As a result of his appeal, Nurse Chishhall went to St Kilda in August 1890, spending ten months there until she returned to Glasgow in June 1891. A month later, she returned to St Kilda, having visited, with Mr Fiddes, a number of eminent Glasgow doctors, seeking their assistance with the problem of neonatal tetanus.⁴⁰ Amongst these was Prof. W.L. Reid, who outlined a method of tetanus prophylaxis for Nurse Chishhall to use. During the following year, five children were born; of these five, one was stillborn, two lived and two died of tetanus. The two that lived however, were the only cases of childbirth that Nurse Chishhall had been permitted to attend. Nurse Chishhall returned to Glasgow in June 1892 and did not return to St Kilda.

Mr Fiddes then returned to Glasgow, and although he attempted to secure the services of another nurse, was unsuccessful in his quest. He consulted Prof. G.A. Turner, the President of the Glasgow Obstetrical & Gynaecological Society, who gave him instructions in the application of iodoform to the umbilical stump, covering it with a 'large pad of sublimated gamgee'.^{33,34} He instructed Mr Fiddes to dust a small amount of iodoform around the umbilical stump each day, until the cord separated.

After carrying out these instructions in St Kilda, Mr Fiddes returned to Glasgow in August 1894, and left the following report with Prof. Turner: ⁴¹

'I have not lost a single case since I began the gauze bandages and the pad on the navel. I dust the navel twice, morning and evening, with iodoform, and also give a grain of chloral twice a day. I begin these applications on the second day after birth, and continue until the critical ninth or tenth day is over. I pay particular attention to sanitation. The nurse must have everything about her clean and free from impurities personally pertaining to her hands. None of their wrappages are allowed

about the infant, as they contain the bacilli; but I buy flannel in Glasgow when I am through. A St Kildan mother never thought hitherto, of making any preparations for the new visitor. He or she was wrapped in a piece of blanket till the ninth or tenth day was over, and if the infant survived, then the mother began to show her affection for her offspring - not till then. This is now being changed, and faith placed in the means of relief. I also prevent the mother giving the baby the breast till the critical period is over, but I have a person beside me ready to suck the breast, and thus keep the milk going until I see the danger is over, and then I dispense with the bottle. Up till this time I feed the baby on sugar and water, with a little cow's milk added. In this way I treat the infants, with the result that none have been lost. The people are deeply grateful, and I came along to express my thanks personally.'

Prof. Turner replied to Mr Fiddes' letter and corrected some misunderstandings that Mr Fiddes had inadvertently been making regarding these prophylactic measures.^{33,34} However, with these simple measures, no further deaths from neonatal tetanus occurred in St Kilda.

REFERENCES

1. Mitchell, A. 'Consanguineous marriages' Edin. Med. J. 1865, April, 899-904.
2. Gibson, G. 'Tragedy of St Kilda' Caledonian Med. J. 1926, April, 50-62.
3. Ferguson, T. 'Mortality in Shetland a hundred years ago' Scot. Med. J. 1960, 5, 107-12.
4. Mackenzie, C. 'Parish of Stornoway' Statistical Account of Scotland 1796, 19, 241-62.
5. Macdonald, D. 'Parish of Barvas' Statistical Account of Scotland 1795-1797, 19, 263-73.
6. Monro, H. 'Parish of Uig' Statistical Account of Scotland 1792-1797, 19, 280-8.
7. Stuart, G. 'Parish of Kilbride' Statistical Account of Scotland 1792-1793, 8, 578-82.
8. Hamilton, J. 'Parish of Kilmory' Statistical Account of Scotland 1791-1793, 9, 165-71.
9. Stewart, F. 'Parish of Jura & Colonsay' Statistical Account of Scotland 1792-1793, 7, 317-34.
10. Collacott, R. 'Neonatal tetanus in St Kilda' Scot. Med. J. 1981, 26, 224-7.
11. Collacott, R. The Development of General Practice in the Scottish Islands Ph.D. thesis, Leicester University, 1982, 108-13.
12. Murray, G. St Kilda diary 1886. [Bute Collection, Edinburgh]
13. Macaulay, K. A History of St Kilda 1764, Edinburgh: Mercat Press, 1974.
14. Morgan, J. 'The diseases of St Kilda' British & Foreign Medical & Chirurgical Review 1862, 29, 176-91.

15. Parish Register [Burials]. St Kilda [Register House, Edinburgh]
16. Parish Register [Baptisms]. St Kilda [Register House, Edinburgh]
17. Register of Births, St Kilda, Registrar for Scotland, Edinburgh.
18. Register of Deaths, St Kilda, Registrar General for Scotland, Edinburgh.
19. Connell, R. St Kilda and the St Kildans, London: Hamilton, 1887.
20. Sands, J. Out of the World, or, Life on St Kilda, Edinburgh: Maclachlan & Stewart.
21. MacCallum, H. 'St Kilda' Caledonian Med. J. 1907, 7, 18-24.
22. Kearton, R. and Kearton, C. With Nature & a Camera, London: Cassel, 1899.
23. Nicol, T. By Mountain, Moor and Loch to the Dream Isles of the West, Stirling: Mackay, 1931.
24. Anon. 'St Kilda' Brit. Med. J. 1926, 2, 80-1.
25. Otter, H. 'St Kilda' Letter to The Times 1871, August 31st, 4.
26. Ross, J. 'Trismus neonatorum or lockjaw in the Lewis' Annual Report of the Board of Supervision for Scotland 1892, 47, 34-5.
27. Macaulay, A. 'Lochs' Annual report of the Board of Supervision for Scotland 1892, 47, 35.
28. Corfield, W. 'St Kilda' Letter to The Times 1871, August 23rd, 4.
29. Corfield, W. 'St Kilda' Letter to The Times 1871, August 28th, 4.
30. Anon. 'The children of St Kilda' Brit. Med. J. 1877, 1, 395-6.

31. Macdonald, C. 'St Kilda: its inhabitants and the diseases peculiar to them' Brit. Med. J. 1886, 2, 160-3.
32. Anon. 'St Kilda' Letter to The Times 1871, August 25th, 4.
33. Turner, G. 'The successful preventive treatment of the scourge of St Kilda' Glasgow Med. J. 1895, 3, 161-74.
34. Turner, G. 'The successful preventive treatment of the scourge of St Kilda' Brit. Med. J. 1896, 2, 1191-3.
35. Ferguson, T. 'Infantile tetanus in some western isles' Scot. Med. J. 1958, 3, 140-6.
36. Collacott, R. 'Medical and nursing services to St Kilda' Scot. Med. J. 1985, 30, 181-3.
37. Mackenzie, W. Report on the Physical Welfare of Mothers & Children, Scotland: Carnegie Trust, 1917.
38. Bruce, A. 'Ross-shire' Annual Report of the Board of Supervision for Scotland 1892, 47, 35.
39. Royal College of Physicians of Edinburgh. Statement regarding the existing deficiency of medical practitioners in the Highlands and Islands: 1852.
40. Anon. 'High child mortality in St Kilda' Brit. Med. J. 1891, 2, 275.
41. Fiddes, A. Letter to Dr G.A. Turner, 1894, August 6th.

TOWARDS A RATIONAL INFANT-FEEDING
THE SCIENCE OF NUTRITION AND PAEDIATRICS
IN THE NETHERLANDS (1840-1914)

Annemarie de Knecht-van Eekelen

CHEMISTRY AND PHYSIOLOGY

Scientific studies of nutrition in the nineteenth century were in chemistry and physiology. These subjects were often practised by physicians. Chemistry of nutrition belonged in the first place to the working-field of the chemists.

Long before 1840 physiologists occupied themselves with experiments concerning digestion, concerning the nature and functioning of digestive juices and the need for organic and inorganic nutrients. The question of the chemical composition of organic matter, more especially of proteins, to an important extent dictated thoughts about food. The assumption that nutrients containing nitrogen are indispensable for the support of life, was experimentally affirmed by the French physiologist Magendie in 1816. Subsequent studies concerning the nutritional value of gelatin, a nitrogenous substance, were instrumental to an increase in the interest shown in nutritional research.

Experimental data from 1826 on composition and functioning of the digestive juices, compiled by the German physicians Tiedemann and Gmelin, as well as observations on human gastric juice, published by the American physician Beaumont in 1833, constituted an important increase of the available knowledge concerning the physiology of digestion. In the thirties this was followed by the discovery of diastase in saliva and pepsin in gastric juice which made it clear that digestion is not operated by vital forces, but by physical substances.

The English physician Prout in 1827 stated that nutrition had to be balanced, for which he chose the composition of milk as an example: the three classes of substances present in milk - 'albuminous', 'oleaginous' and 'saccharine' - have to occur in sufficient quantities in our daily food. The similarity of animal and vegetable albuminoids, established by the Dutch physician Mulder in 1838 - which led him to formulate the concept of a common 'proteine' radical - offered a new possibility to outline nutrition in chemical concepts, independent of the origin of the particular food. Finally in 1842 the classification of the German chemist Liebig, who divided nutrients in two groups - nitrogenous substances to constitute the animal matter and non-nitrogenous substances as 'respiratory aliments' to be used in respiration and production of animal heat - offered a coherent and comprehensive general approach to the physiological phenomena of nutrition.

With Mulder's appointment in 1840 as professor of chemistry in Utrecht, nutrition research, as part of physiological chemistry, received a position within the Dutch university education. The importance of Mulder and the physiologists from his school - Moleschott, Donders, Van Deen and Heynsius - for the development of physiology as an experimental science, has been studied. Because of their appointments as professors, respectively of Donders in Utrecht [1847], Van Deen in Groningen [1851] and Heynsius subsequently in Amsterdam [1858] and Leyden [1866], these physicians have transmitted the interest for experimental physiology and physiological chemistry to following generations of students, including Pekelharing and Hamburger. In 1888 Pekelharing took over the teaching of physiological chemistry in Utrecht, while Hamburger was appointed for physiology in 1902 in Groningen. I have discussed their work on digestive juices and the contributions of Mulder's pupil Von Baumhauer to nutritional chemistry in my thesis Naar een Rationele Zuigelingenvoeding. Voedingsleer en Kindergeneeskunde in Nederland [1840-1914]: Nijmegen: 1984. Von Baumhauer was appointed professor of chemistry and pharmacology in Amsterdam in 1847. He developed a method of analysis for milk and championed the establishment of a local food administration, which he presided over from 1858 to 1865.

While the physiological chemistry of digestion was being studied in the Netherlands, metabolism research was mainly a

foreign affair. French and later German physicians and chemists developed methods to study respiration, assimilation and excretion of nutrients. The work of the French Regnault and Reiset dated from 1849 and the Germans Bidder and Schmidt published their important book on digestive juices and metabolism in 1852. Voit, one of Liebig's pupils, was the undisputed master in this field. In the sixties and seventies together with Pettenkofer he executed a number of fundamental investigations into the need of the organism for proteins, fats and carbohydrates. Voit's pupil Rubner was able to add to these data his caloric approach of nutrition.

The discovery of amino acids as components of proteins, by the German chemist Fischer at the beginning of this century and the subsequent nutrition-research with amino acids by the Swiss physiologist Abderhalden brought to an end much of the uncertainty about the digestion and resorption of proteins. With this knowledge the study of the function of digestive organs and their juices could proceed rationally. In 1911 the Americans Osborne and Mendel made an important contribution to the knowledge of vitamins - vital nutrients whose composition was unknown in the period under consideration - with their feeding experiments with isolated food substances.

Except for chemistry and physiology, nutrition-research found a place in hygienics, in which subject the first professors in the Netherlands were appointed in 1877. Of these Fokker and Forster have published on nutrition in connection with hygiene. After 1880 bacteriology took a central position in hygienics.

Towards the end of the last century the importance of minerals in nutrition was stressed. A number of symptoms of diseases - actually caused by vitamin deficiencies - were attributed to disturbances in mineral metabolism: rickets as well as Barlow's disease were considered in this light. In the case of beriberi, a bacteriological aetiology was looked for. The contributions of Dutch physicians - Eijkman, Vorderman and Grijns - to solving the beriberi question, constitute a highlight in the Dutch history of nutrition-research. Their observations have been of unique value in setting up the vitamin-hypothesis as was done by the Polish biochemist Funk in 1912.

THE FIRST DUTCH PAEDIATRICIANS

The application of the knowledge thus gained to the nutrition of infants could not be realised before certain terms had been met. Until nearly the end of the nineteenth century paediatrics was a subject to which no direct attention was paid in the Netherlands. As part of internal medicine, paediatrics was given a moderate place in the medical curriculum. The first children's hospitals were established on private initiative of individual physicians without participation of the universities. Children's hospitals were founded in Rotterdam [1863], Amsterdam [1865], Arnhem [1881], The Hague [1885], Dordrecht [1885], Utrecht [1888], Groningen [1890] and a second children's clinic in Amsterdam [1895]. In these hospitals at first no infants were admitted, because the care of such young children involved too many problems. During the nineties things changed and infant care was no longer limited to a few hospital polyclinics. At the beginning of the twentieth century the first infant health stations were founded, a development to which the physician Plantenga from The Hague contributed considerably.

In the nineties, the first private tutors in paediatrics were appointed to the universities: Hulshoff in Utrecht [1890], Graanboom in Amsterdam [1892], De Bruin also in Amsterdam [1898] after which he became the first lecturer in the subject [1899]. Scheltema was appointed the first professor of paediatrics in Groningen in 1909. In 1908 Leyden got its first private tutor in paediatrics, namely Gorter, while in Utrecht Haverschmidt had taught the subject since 1905. The foundation of the 'Nederlandsche Vereeniging voor Paediatric' in 1892 created the possibility of exchanging scientific experiences and to build up together the study of paediatrics in the Netherlands to improve the 'fate of our children'.

At Dutch universities in the nineteenth century no work was done on infant nutrition. This was contrary to work in the university children's clinics in Vienna and Berlin, which set the tone in this field in the second half of the last century. Important observations were made by physicians outside the universities. Publications of the German doctors Biedert and Camerer and of the Dutch general practitioner De Jager, provide examples of scientific information, which was gathered in their own practices.

METABOLISM

Interest in the physiology of the healthy infant – its weight, growth, nutritional needs and metabolism – increased slowly after 1870. Several physicians of the German speaking area registered weight increase of breast fed infants in order to find a standard of normal growth: the growth-chart. Examples of this kind of research by Hähner [1880] and Feer [1896] have not lost much of their value. Also in Dutch publications in the course of the seventies the importance of regular weighings had been stressed for checking the infant's development.

In 1878 Camerer was the first to publish on infant metabolism. In the nineties the well-known German professor of paediatrics Heubner and his pupils – later in cooperation with Rubner – studied the metabolism and average daily caloric need of infants. As a result of their research Heubner in 1900 introduced the concept of energy-quotient; the amount of assimilated calories per kilogram body weight, which was to serve as measure for the infant's requirements. Ignorance of the exact process of digestion was an essential barrier to the development of nutritional advice. Ideas about thrush and dentition as causes of digestive disturbances, led to inexpert opinions of nutrition and care of infants.

An important contribution of the French paediatricians Rilliet and Barthez to the classification of disorders of the digestive tract of infants dates from 1843. In the Netherlands however the interest in French observations decreased steadily after 1850, to be replaced by Austrian and German influences. The classification of intestinal disturbances according to the Viennese paediatrician Widerhofer, in dyspepsia, catarrh, enteritis and cholera infantum, was from the sixties to the end of the century, the starting point for the study and treatment of these diseases.

Much research was done into the physiological function of the saliva, gastric, pancreatic and intestinal juices, before any clarity was brought into this matter. The presence of enzymes in saliva and pancreatic juices of infants was only established with certainty after 1874. For the time being physicians rejected the use of starch in infant food. Experiments from Heubner's clinic in 1896,

which showed that an infant has no trouble with the digestion of starch, changed this attitude.

The mode of destruction of proteins remained a problem as long as the protein structure was not clarified. The discussion about the influence of gastric juice, pepsin and rennet on coagulation of milk, was of great importance to the composition of infant formula. Biedert's theory of 1869 concerning the poor digestibility of casein in cow's milk, led to the use of food mixtures with low protein contents. His theory was definitely refuted about the turn of the century by the results offered by the newer metabolism research: the so-called 'harmful food-rest' did not consist of undigested protein but of fat-rests.

The classical opinion, that acids would further the development of intestinal disturbances, made the acceptance of buttermilk as apt for infant feeding more difficult. Buttermilk was among the Dutch people a common food for all ages. Based on their own positive experiences with buttermilk feeding several Dutch physicians, Ballot (1865), De Jager (1895), Teixeira de Mattos (1900), attempted to increase medical appreciation for buttermilk formulas; the last mentioned finally succeeded.

Bacteriology of the intestinal tract was a new research field, which from 1885 was developed in the first place by the Austrian paediatrician Escherich. The explanation of digestive disturbances in terms of bacterial infection, constituted an important addition to the known causes of these diseases.

Based on physiological, chemical and bacteriological knowledge, the concept of nutritional disturbances could be developed in the twentieth century. The paediatricians Czerny in Breslau and Finkelstein in Berlin have, each in their own ways, set forth what should be understood by this concept. Czerny's classification of nutritional disturbances ex infectione, ex alimentatione and ex constitutione was introduced by Gorter in the Netherlands in 1913. The classification according to Finkelstein in four degrees viz. disturbances in alimentary balance, dyspepsia, decomposition and intoxication, had already been brought to the attention of the Dutch medical world in 1907 by the paediatrician Cornelia de Lange.

RICKETS AND BARLOW'S DISEASE

Two syndromes were directly connected with infant feeding habits: rickets and Barlow's disease. The proper aetiology of both diseases was still unknown. In the forties of the last century rickets was treated with cod-liver oil, without knowledge of the active principal in this medicine. Cod-liver oil and other remedies like iodine and iron preparations, were generally applied in cases which were considered to be of a constitutional nature. In the sixties in fighting rickets the stress was shifted to an improvement in nutrition and in general social circumstances. Acid food substances, such as buttermilk, were supposed to further the disease, because of the assumed property of lactic acid to dissolve calcium from the bone. The Viennese paediatrician Kassowitz in 1884 introduced a new therapy for rickets using phosphorus-cod-liver oil, a remedy of which the beneficial effect was ascribed not to the cod-liver oil, but to the hypothetical healing power of phosphorus. A rational treatment of rickets could not be achieved before 1914, because of the lack of knowledge about vitamin D.

The same applied mutatis mutandis for Barlow's disease, a syndrome which was considered as 'acute rachitis' in the fifties. The similarity with scurvy was brought forward by the English physician Barlow in 1883, but several German physicians looked upon this affection as a form of rickets until the turn of the century. De Bruin introduced the notion of the morbis Barlowii as being a form of scurvy in the Netherlands in 1893. The link between the occurrence of this disease and the use of sterilised, industrially prepared infant-formulas, was clear to him. Recommended means of preventing or curing the illness were fruit juices, raw cow's milk and mother's milk. In 1914 however Gorter was not able to express himself on the aetiology of this disease.

THE IMPORTANCE OF MILK

The chemistry of the contemporarily known components of milk, protein, fat, sugar and minerals, was subject to investigation during the whole period under consideration. The aim to make artificial nutrition chemically equivalent to mother's milk, was the starting point for the preparation of several formulas. For this purpose mother's milk and milk of different kinds of animals were analysed time and

again. In composition ass's milk appeared - more than cow's milk - to resemble mother's milk rather well, so that it was considered a suitable food for new-born children. Except for cow's milk, milk of sheep and goat was used when handy. Cow's milk however got by far the most attention. Comparison of cow's milk with mother's milk was made more difficult because of the altering in chemical composition of both kinds of milk. The reliability of protein analyses was considerably increased during the eighties.

Microscopic milk research was particularly directed to the investigation of the corpuscles in colostrum. In the forties these cells were considered as a sign of unripeness of the milk, which was therefore said to be unsuitable for infants. Czerny established in 1890 that these cells were white blood-cells, entering the lacteal ducts when milk is retained.

For artificial infant nutrition the use of unboiled milk of one and the same healthy cow was prescribed until bacteriological findings changed ideas on this subject. In the eighties the demand for the use of germ-free milk became so important, that people changed to boiled, pasteurised or sterilised milk. The sterilisation appliance designed by the German veterinary surgeon Soxhlet in 1886, met the needs of preparing sterilised food at home. Disadvantages of sterilised food, in particular the occurrence of Barlow's disease, led to the establishment of sanitary dairies, which were to produce clean, wholesome milk that was supposed to be consumable raw. In my thesis Naar een Rationele Zuigelingenvoeding some details are described about the sanitary dairy farm 'De Vaan', which was founded in 1907 in Rotterdam.

Inspection of the milk trade was insufficient during the whole period so that people complained continually about the bad quality of retail milk, which was often diluted with water. A local food administration existed in Amsterdam from 1858 till 1867. The organization of food inspection throughout the country was only realised after legislation in 1919.

In the nineteenth century the possibility existed to feed the infant with milk from its own mother, milk from a wet-nurse or with artificial food. In the middle of the century medical circles insisted strongly on the mother nursing the child. In a well-known manual for mothers - written in

1845 by the Amsterdam physician Allebé - and in other medical publications from the following years, breast feeding was considered an obligation of motherhood. Information in word and in writing about the importance of breast feeding was propagated among the Dutch people during the sixties and seventies as well. Nevertheless the limited data on the actual application of breast feeding in that time give the impression that women working outdoors, especially in certain agricultural areas, rather seldom nursed their children. In the more well-to-do circles, mothers, for reasons of health, beauty or social occupations, were not inclined to feed their own children. They would rather employ a wet nurse.

From some reports on the people's nutrition, which were drawn up in the seventies, it appears that there existed considerable variations in feeding habits by area and by class. The available data are too limited to allow making an accurate survey of the use of breast feeding in the Netherlands in the nineteenth century.

In general, additional feeding was readily given next to mother's milk. Pap and panada were the most suitable, while infants over six months old often got a bite from the family dish.

ARTIFICIAL FEEDING

During the nineteenth century the high infant mortality was largely attributed to malnutrition. The breast fed child had a better chance to survive than its companion who depended solely on artificial food. In the course of the seventies, medical efforts were directed to an improvement in the quality and the hygiene of artificial food and the use of sterilised milk gained an important place. After 1890 it became more and more evident that mother's milk was of unique composition and could not in every way be substituted by artificial food. In the beginning of the twentieth century it was therefore again attempted in several ways to increase breast feeding. Apart from information by word and in writing, the examination of the infant in infant health stations became more and more important in the giving of advice on the feeding of healthy infants.

Inquiries into feeding practices, held between 1905 and

1914, gave a better insight into the use of natural or artificial food in different population groups. While 70-80% of the mothers started with breast feeding, their number decreased during the first month to less than 30% in week 19. Mothers from low social classes practiced less breast feeding, while Jewish mothers continued breast feeding for a longer period than others.

In the course of the seventies the task of the wet-nurse, a well-known figure in the household of higher circles of the last century, was taken over by the mother, who however mostly used the improved bottle feeding. Only for sick and weak infants were people still committed to the use of mother's milk.

A number of infants have always survived without women's milk. In 1850 pap, panadas and diluted cow's milk were used as alternatives. The optimum dilution was calculated by the physicians through chemical analysis of cow's milk as compared with that of mother's milk. The advice varied according to the analytical data used. Normally $1/3$ to $1/2$ parts of milk diluted with $2/3$ to $1/2$ parts of water or some flour-water and about 3% of sugar, was recommended for the first weeks, after which the quantity of milk was gradually increased. The child was fed ad libitum. For infants with gastro-intestinal disturbances in those days the use of broth, beef-tea or eggs beaten up in water were indicated.

The first proprietary food for infants was Liebig's mixture of flour, sugar and malt extract which was introduced to the Netherlands in 1865. Other industrial products, which were used for infant-feeding in the Netherlands were Nestlé's 'farine lactée', developed in 1867 and sweet condensed milk, which was also produced in Switzerland from 1867. The first Dutch manufacturer of condensed milk was 'Hollandia' in Vlaardingen, which started production in 1882.

In practice good results were obtained with the use of a mixture of buttermilk, flour and sugar. This food became known in the Netherlands from 1865. A renewed encounter with this product in 1895 led after 1900 to its successful use in Dutch and German clinics. Buttermilk-feeding was used in the Netherlands also as a reliable alternative to feeding with diluted cow's milk.

Based on the theory of indigestibility of cow's milk casein, Biedert in 1874 developed a mixture in which milk was

replaced by cream. The Dutch physician Hijmans van den Bergh in 1898 pointed out the importance of this food for the prevention of rickets according to the amount of fat. When Biedert's theory became obsolete, this type of feeding went out of use.

For sick infants in the seventies and afterwards, use was made of the whites of eggs, dissolved in water, and in a mixture with milk whey. Starch containing food was generally discarded by physicians for infants under six months old.

Until the beginning of this century there remained different opinions on the optimum dilution of cow's milk. Dutch paediatricians showed preference for the prescriptions of Escherich of 1889, increasing from '3/8 milk' after birth to undiluted milk in the seventh month. Escherich's table could be simplified over ten years later. With Heubner's calculations on the infant's requirements it was possible to establish the average daily food intake in calories. Combined with Czerny's prescription of a maximum volume of 1000ml per 24 hours and with addition of flour for infants over four months, a rational prescription for artificial infant feeding was developed. According to these principles Gorter in 1914 advised feeding with diluted cow's milk with sugar, beginning with '1/3 milk' at birth, leading up to undiluted milk in the seventh month, adding flour from the fourth month on.

The large number of dietary infant foods, developed at the turn of the century, is indicative of the search for a rational treatment of nutritional disturbances. Most foods were based on a decrease or change of cow's milk-protein. In my thesis the following proprietary infant foods are discussed: Gärtner's fat-milk, several kinds of 'laboratory milk', mixtures with addition of vegetable fat or whites of eggs, Backhaus-milk, Emsternate-milk and albumen-milk. These preparations have been unable to hold ground. For sick infants malt-soup, advised by Czerny's assistant Keller in 1898, and Finkelstein's protein-milk of 1910 have proved of more lasting significance.

The use of porridge did not change essentially in the period 1840-1914. Because of increasing industrial production of infant foods the assortment of similar prepared cereals has become very large in the twentieth century.

An improvement of the quality of feeding bottles and especially of teats, has furthered the use of artificial feeding. In 1885 the French physician Tarnier introduced lavage by means of catheter for prematures. In 1892 the Utrecht paediatrician Hulshoff described his experiences with this feeding method in the children's hospital.

Adapted from the English Summary in:

Van Eekelen, A. Naar een Rationale Zuigelingenvoeding. Voedingsleer en Kindergeneeskunde in Nederland [1840-1914], Doctoral thesis, Catholic University of Nijmegen. Nijmegen: G.H. Thieme. 1984, 375.

©1986 A. de Knecht-van Eekelen

THE ROLE OF IBN TUFAYL, A MOORISH PHYSICIAN, IN THE DISCOVERY OF CHILDHOOD IN SEVENTEENTH CENTURY ENGLAND

G.A. Russell

In the early spring of 1153 or so, a promising scholar from Cordova was introduced to the Almohad Prince, Abū Ya'qūb Yūsuf, by the court minister and physician.¹ When the prince abruptly asked the younger man who was so highly praised and recommended, 'what did the philosophers think concerning the Heavens? Did they think the Heavens eternal or created in time?' - unsure of the situation the embarrassed scholar hesitated. Although he was well trained in both the Islamic and the 'foreign' sciences, faced with a question of such dangerous theological implications, he became afraid and denied all knowledge of such matters! It was only after the prince turned to his minister and spoke freely of Plato, Aristotle, Avicenna, and others that he ventured to join in. With a brilliant discussion, however, he so impressed the prince that he departed with magnificent presents: a robe of honour, a caparisoned horse as well as money. More importantly, this formed the beginning of a friendship with the prince who later became the Almohad ruler [1163-84] in Spain.²

This timid scholar, in spite of such an inauspicious beginning rose to great fame. His patron, who was already a distinguished physician, philosopher, and astronomer came to be known solely through his protégé. The scholar was Ibn Rushd [1126-98], the Averroës of Latin Europe and the 'Great Commentator' on Aristotle. The patron was Abu Bakr ibn Tufayl [Latin: Abubacer; c. 1105-85] whose chief claim to fame was to have sponsored Ibn Rushd. The survival of a little manuscript, ironically a narrative, suggests however that the patron might well be more important than his

illustrious student.³ Perhaps one could even claim that through this remarkable work, entitled Risālat Hayy ibn Yaqzān [رسالة حياة... به يفظا ن] ⁴,

Ibn Tufayl's impact on European thought has been greater and more enduring than that of Ibn Rushd (Averroës); and surprisingly, not in the Middle Ages but in the seventeenth and eighteenth centuries. In fact, in those centuries, in the so-called Ages of Reason and Enlightenment, the diffusion of Hayy ibn Yaqzān reached almost epidemic proportions. To show how this happened, the complex chain of events will be simplified by briefly describing the source and nature of the work in order to focus on three key translations which were responsible for its astonishing impact and all of which came from England.

What is additionally significant is that a major source for this work was the physician-philosopher Ibn Sinā (Latin, Avicenna; 980-1037). In the 'Introduction' to the Risāla, Ibn Tufayl admits his indebtedness to Ibn Sinā.⁵ Not only the name of Hayy ibn Yaqzān and those of the two other figures, Salāman and Absāl, in the narrative come from Ibn Sinā's cycle of poetic essays,⁶ but what is much more important is that the underlying logic of a child's intellectual development in the work derives from Ibn Sinā's psychology (علم النفس).

Ibn Sinā's psychology, as it is expounded in Book VI of his encyclopaedic al-Shifā [كتاب الشفاء - الجزء السادس - الطببيات] ⁷ and in the corresponding parts of its abridged version, the Kitāb al-Najāt [] ⁸, remains

basically in the Aristotelian and the peripatetic tradition. Within this, however, he develops a highly systematic as well as an original approach. The relevant key points of his essential contribution can be summarised in terms of a notion that knowledge comes initially via the senses, and that it is organised according to the principles of association. He combines this with a notion of individual intellectual development in terms of a natural process from a 'blank slate' through various stages to full maturity where the potential of the individual (عقل ميولاً) is actually realised (عقل فعال) and on occasion culminates in creative insight (عقل مستفاد). It is these principles which are given a graphic exposition by Ibn Tufayl in his Risāla.⁹

The structure of the narrative is well-known. Briefly, a baby (Hayy ibn Yaqzān) cast up on a desert island and

fostered by a gazelle, survives. Through sensory experience and association of ideas, he gradually discovers not only his identity as distinct from that of animals, but also acquires an extensive knowledge of his environment. Both by observation and deduction, he systematically progresses from natural sciences to philosophy and finally to an awareness of God and religion. In fact, Hayy ibn Yaqzān encompasses the entire scope of human knowledge: the external realm of the natural sciences, the internal realm of the workings of the human mind, and the social realm of law and religion. How he acquires this knowledge constitutes the three parts of the narrative.

The significance of the work lies in showing how experience via the senses starts a process of mental development to gradually transform the vacuous state of the infant into the subtle complexity of a mature intellect. Ibn Tufayl achieves this by a brilliant application of Ibn Sinā's principles of psychology, demonstrating in great detail and with considerable insight how sensory experience constitutes the basis of knowledge and of rational thought. In fact, Ibn Tufayl provides us with what could be regarded as an 'ideal' experiment, testing the validity of Ibn Sinā's psychological theories in a simulated situation.¹⁰

The extent of the impact of Hayy ibn Yaqzān on European thought can be traced through the history of its translations which ran into many editions in the seventeenth and eighteenth centuries.¹¹

HAYY AS THE 'PHILOSOPHUS AUTODIDACTUS'

The process of what could be regarded as the 'naturalisation' of Hayy ibn Yaqzān started at Oxford in 1671 through the translation of the Arabic text into Latin by Edward Pocock [1648-1727]. It was entitled the Philosophus Autodidactus.¹² This bilingual edition in both Arabic and Latin, included a historical introduction by the translator's distinguished father, Edward Pocock, the Elder [1609-1691].¹³ It was the father in fact who played a major role in the dissemination of the book. He was an eminent man, well-known both in England and on the Continent as a pioneer in the study of oriental languages, namely Hebrew and Arabic. He had travelled in the Middle East first as chaplain to the English Merchants of Aleppo [The Levant Company] for a period of five years; then he spent a further

five years as chaplain to the British Embassy in Constantinople. The result was not only the improvement of his Arabic and the acquisition of manuscripts for the Bodleian Library, including the manuscript of Hayy ibn Yaqzān, but also the creation for him of the first chair of Arabic at Oxford in 1636.¹⁴ Regarded not only as one of the most learned but also as one of the most attractive men of his age, his reputation seems to have completely overshadowed that of his son to the extent that even the translation of Hayy ibn Yaqzān has frequently been attributed to the father.¹⁵

The relations of the Pococks with European scholars were extensive. Capitalising on this, Edward Pocock, the Elder, sent copies of the Philosophus Autodidactus to eminent men in Europe immediately after its publication in 1671; not only to orientalist and linguists such as Ferrand, Cappellain, Herbelote, Pétis de la Croix, but also to scientists like Huygens and influential figures such as Thévenot who was corresponding with every celebrity of his time.¹⁶ Its success was not only due to Dr Pocock's advertising initiative. Its translation into Latin had made it immediately accessible to scholars both in England and on the continent. Furthermore, the marvellous title, 'Philosophus Autodidactus' seemed a perfect match for the zeitgeist of the age. The 'self-taught philosopher' was indeed a perfect expression of the Hayy's appeal to the Age of Reason and Enlightenment. Philosophers like Leibniz [1646-1716] were deeply impressed.¹⁷ It is interesting to note that John Locke [1633-1704], the father of English Empiricism and Associationism, who came to regard the child's experiences and education as the fundamental determinants of his development, was a close friend of Dr Pocock. As an undergraduate at Oxford he had attended his lectures and come under his Royalist influence. Locke admired Pocock immensely and described him as a man with an excellent sense of humour, and as one 'who had the silence of a learner where he had the knowledge of a master.'¹⁸ He was not only a close friend of the 'learned Dr Pocock' but also the tutor of his son, Edward, the translator.¹⁹ Furthermore his Essay Concerning Human Understanding in which he outlines the principles of Associationism, with his view of the infant's mind as a tabula rasa was drafted in 1671, the same year as the publication of the Philosophus Autodidactus. In fact, there were two draft manuscripts of the Essay both of which bear the titles 'Intellectus' and 'De Intellectu Humano.' The final title as we know it was

not given until fourteen years later.²⁰

The widely circulated Latin translation of Pocock proved to be an important source for subsequent translation: first into Dutch as De Natyrlyke Wysgeer in 1672,²¹ then into English twice as The Improvement of Human Reason with different subtitles and by different translators in 1671 and 1686, and into German as Der von sich selbst gelehrte Weltweise²² in 1726.

HAYY AS 'QUAKER PAR EXCELLENCE'

The first English translation of Hayy ibn Yaqzān, which was made in 1674 from Pocock's Latin, had a most significant role to play in the context of religion. In an age of non-conformism and dissent, the intellectual and religious maturing of Hayy ibn Yaqzān by his own efforts and experience provided a clear example of the arbitrariness of both the Church and the Scriptures.²³ The translator George Keith [1639-1716] was a Scotsman who became converted to Quakerism. Extremely militant in his beliefs, his missionary activities seem to have taken him not only in and out of the Aberdeen prison, but also to England, Holland, Germany and America. Unlike Pocock, he seems to have been one of the most quarrelsome men of his age.²⁴

Keith explains the reason for his translation of Hayy ibn Yaqzān in his 'Advertisement to the Reader.' What appealed to him in Hayy was that it put personal experience above established dogma. Keith's translation coincides with his drafting of the Quaker manifesto together with the cooperation of Robert Barclay [1648-1690], the other highly influential Scottish apologist for the 'Society of Friends.' It was what Keith saw in Hayy which was summarised as the Quaker 'common notion': 'the sufficiency of inner light'.²⁵ Four years later Hayy ibn Yaqzān was used at great length by Robert Barclay in his Apology as the perfect illustration of the 'experience of inner light without the means of the Holy Scriptures.'²⁶ The Apology which is regarded as one of the most authoritative statements of Quaker principles became highly influential in its original Latin edition as well as in its English, French, Dutch, and other versions. Thus with Keith's translation, Pocock's Philosophus Autodidactus became a Quaker par excellence. It was this belief that truth can come from personal experience together with the belief in the improvement of human nature which lie at the

basis of the Quaker interest in the education of children as well as in their more humane approach to the mentally ill in the seventeenth century.

THE IMPROVEMENT OF HUMAN REASON

The highly successful exploitation of Hayy ibn Yaqzān for Quaker propaganda gave rise to a translation which this time was directly from the Arabic original into English. Dedicated to Pocock, the Younger, it was published in 1708 and reprinted several times in 1711 and 1731.²⁸ The translator Simon Ockley [1678-1792] was a scholar who seems to have pursued his studies relentlessly: first as a lecturer in Hebrew at the age of seventeen with hardly enough to subsist, then in a parsonage teeming with hungry children, all his own, and finally in gaol because of debts. Even when he was appointed Professor of 'Arabick' at Cambridge in 1711, his stipend was so meagre that he wistfully contrasts his fate with that of Pétis de la Croix under the magnificent patronage of Louis the XIVth and Colbert.²⁹ He is best known for his influential two volume History of the Saracens.³⁰ Gibbon, the distinguished eighteenth century historian, who had in his Decline and Fall made use of Ockley's History, wrote in a moment of generosity that Ockley 'Besides printed authors . . . draws his materials from the Arabic MSS. of Oxford, which he could have more deeply searched, had he been confined to the Bodleian Library instead of the city [Cambridge] gaol: a fate how unworthy of the man and his country!' ³¹

Ockley's translation of Hayy ibn Yaqzān was undertaken for two main reasons. As a scholar he was reacting to the previous translations which were from Pocock's Latin edition and not from the Arabic original. As 'they had mistaken the sense of the author in many places,' it had to be put right. More importantly, however, it was the result of his reaction as an Anglican vicar to the dissident Quaker threat and the successful use of Hayy for Quaker propaganda. In fact, the situation was sufficiently alarming to require not only a new translation but an "Appendix" as well, in order to 'put a stop to its bad use.' Ockley's concern is to refute the thesis that the individual guided only by his inner light could arrive at the true knowledge of God without any instruction. In his 'brief reappraisal' which runs into a thirty-eight page long "Appendix" with its own table of contents, he stoutly returns the emphasis to the safer view

of the 'improvement of human reason' where there is no possibility of 'harm' by any religious interpretation, 'Quaker or Mahometan.' ³²

Ockley's translation was thus highly polemical. His edition was also widely read. In fact, it became a blueprint for utopias and plagiarised versions as well as constituting a source for further translations.³³ In the eighteenth century debate on the subject of man in nature versus man in society, Hayy became the paradigm for the natural man. With the discovery of feral children, that is, children reared by wild animals, and a growing interest in primitive societies, there was a serious concern with the implications of the natural versus the civilised man for morality, politics and education.³⁴ In depicting the remarkable development of a child who is self-educated in complete isolation from traditional beliefs, and the restrictions of society, Hayy ibn Yaqzān as the most noble of noble savages became a forerunner of Rousseau's Emile (1712-1778). In fact, the German translation from the Arabic original in 1783 gives it the title of Der Naturmensch with the recognition of its Rousseauesque content.³⁵

Hayy was not a mere intellectual vogue. The notion of the self-taught philosopher was a critical factor in the seventeenth and eighteenth century beliefs regarding the perfectability of human nature by a special education for children. It was out of the recognition that human nature is not immutable, and that it can be moulded by experience and cultivated by education that the concept of childhood took form. The seventeenth century had marked the culmination of a significant social change in attitudes towards children and their morals. Before that time children throughout Europe were regarded simply as 'adults reduced in scale' as can be seen in paintings. It was in this century that childhood was discovered. Moral philosophers such as Locke, and the non-conformist clergymen, particularly the Quakers, began to advocate the separation of children from adult activities and to express great concern over their education. The concept of the innocence of childhood emerged; they were isolated from sexual matters in case they were corrupted. Moral education became one of the prime objectives as the notion of the perfectability of human nature became widespread.³⁶ In England this new moral philosophy was a direct outgrowth of the empiricism of Locke. The belief that the individual is developed by experience alone led to the recognition that

corrupt experiences generate corrupt minds, and conversely that wholesome experiences guaranteed wholesome minds. It was therefore the application of empiricism to morality that was directly responsible for the invention of childhood.

In exploring the question of how experience moulds the child into adulthood Hayy ibn Yaqzān clearly played a major role in this complex social development. Along with Locke and the 'Society of Friends', Ibn Tufayl must be counted as one of the significant contributors to this crucial change. Obviously the extent and degree of his contribution still remains to be determined, but the fact that he played a part cannot be doubted. If this role is to be found as considerable as I believe it to be, then the circle from Europe back to Cordova is complete. It was originally Ibn Tufayl's claim to fame to have been the generous and selfless patron of a brilliant young mind: Ibn Rushd [Averroës]. It is therefore only fitting that his true contribution, via Hayy ibn Yaqzān, is to be the patron of all young minds, and the emancipator of children!

REFERENCES and NOTES

1. The Almohads is the name [from the Arabic al-Muwahhidūn, meaning 'those who affirm God's unity] given to a dynasty which was founded by the Berber Ibn Tumart and which ruled North Africa and Spain [1130-1269] with its capital first at Marrakesh, then at Seville.

2. This account was related by a disciple of Ibn Rushd to Abd al-Wāhid al-Marrākushī, the historian of the Almohad Dynasty, who reports it in his Mu'jib [ed. by Dozy, 174-5]; see Fagnan, E. Histoire des Almohades d'Abd al-Wāhid Merrakechi, Alger: 1892, 208-10.

3. The MS. of another work by Ibn Tufayl was discovered fairly recently with the title 'Long Poem in Rajaz Metre on Medical Science.' See Sarnelli, T. 'Primaute de Cordoue dans la médecine arabe d'Occident' in Actas del Primer Congreso de Estudios Arabes y Islamicos, Madrid: 1964, 441-51.

4. For the Arabic edition see Gauthier, L. Hayy ben Yaqdhān: roman philosophique d'Ibn Thofaīl, texte avec les variantes des manuscrits et de plusieurs ed. et trad. française, 2nd Edn, Beyrouth: 1936.

5. Gauthier, L. op. cit., 15 & 20.

6. For a study of Ibn Sinā's text, see Goichon, A.M. Le récit de Hayy b. Yaqzān commenté par des textes d'Avicenne. Paris: 1959.

7. There are two editions of the Arabic text: Bakoš, J. [ed.] Psychologie d'Ibn Sina d'après son oeuvre Ash-Shifā', Prague: 1956; Rahman, F. [ed.] Avicenna's De Anima, Being the Psychological Part of Kitāb al-Shifā', London: 1959.

8. Kurdī, M.S. [ed.] Kitāb al-Najāt, [Egypt, 1331 A.H.]; English transl. by Rahman, F. Avicenna's Psychology, London: 1952.

9. For a detailed study of the principles of Ibn Sinā's Psychology and their utilisation by Ibn Tufayl in Hayy ibn Yaqzān, see Atal, G.A. [Russell, G.A.] 'Ibn Tufayl's Hayy ibn Yaqzān: The First Psychological Novel' in Texte und Contexte [Studien zur Deutschen und Vergleichenden Literatur Wissenschaft] Festschrift, Francke Verlag, 1973, 9-27.
10. This section has been extracted from Atal, G.A. [Russell, G.A.] op. cit., 13-23.
11. For editions and translations, see Brockelmann, C. Geschichte der Arabischen Literatur, I, 460 and Supp., 831; Goichen, A.M. 'Hayy ibn Yaqzān' Encyc. Islam, III [new Edn], 331.
12. The full title is Philosophus Autodidactus sive Epistola Ahi Jaafar ebn Tophail de Hai ebn Yokdhan in qua ostendur quomodo ex Inferiorum contemplatione ad Superiorum notitiam Ratio humano ascendere possit. It was reprinted in 1700.
13. For his biography see Twells, L. The Theological Works of the Learned Dr. Pocock, To which is prefixed an account of his life and writings never before printed, I, London: 1740.
14. The Arabic chair at Oxford was in fact established four years after that of Cambridge in 1632.
15. In addition to Twells, L. [op. cit.] also see Chalmers, Biographical Dictionary, XXV, London: 1816, 81-95.
16. This is established from the correspondence of the Pococks with various figures on the Continent between September 1671 and February 1672.
17. Letter to M. l'Abbé Nicaise [1697] in Dutens, [ed.] Opera Omnia, II, Geneva: 1768, 245.
18. Letter to Mr Smith of Dartmouth [July 23, 1703] in The Works of John Locke, E. Esq., III. London: 1714, 332-43.
19. B.L. MSS. Locke, F. II.

20. The two early drafts of the Essay have in fact been edited by Aaron, R.I. and Gibb, An Early Draft of Locke's Essay, Oxford: 1936; and Nidditch, The Draft of Locke's Essay.

21. There is a second Dutch edition, translated from Pocock's Latin and entitled Het Leve van Hai Ebn Yokdhan, Amsterdam: 1701.

22. Ashwell, G. History of Hai Eb'n Yackdan, an Indian Prince, or the Self-Taught Philosopher, 1686. In this translation from Pocock's Latin edition, the text is adapted to popularise Hayy so that he would set an example to 'the men of this licentious Generation' and to 'instruct them in such principles of Morality and Religion, and such alone, as the light of Nature discovers, and which must needs be acknowledged for true by all those, who will judge and act as Men, according to the Dictates of Reason, and the conclusions resulting from Experience.'

23. The full title of the translation is An Account of Oriental Philosophy Shewing the Wisdom of some Renowned Men of the East; And particularly, The profound Wisdom of Hai Ebn Yokdan, both in Natural and Divine things; which he attained without converse with Men [while he lived on an Island a solitary life, remote from all Men from his Infancy, till he arrived at such perfections].

24. Sewell, W. The History of the Rise, Increse, and Progress of the Christian people called Quakers . . . London: 1725.

25. Keith, G. and Barclay, R. Quakerism Confirmed, 1676.

26. Barclay, R. An Apology for the True Christian Divinity, as the same is held forth and preached by the people, called in Scorn, Quakers. Being a full explanation and vindication of their Principles . . . written and published in Latin, for the information of Strangers . . . And now put into our own language for the benefit of his countrymen, 1678.

27. Apology, op. cit., Propositions V and VI, par. XXVII.

28. Ockley, S. The Improvement of Human Reason, exhibited in the Life of Hai Ebn Yokdhan: Written in Arabic above 500 Years ago, by Abu Jaëfar Ebn Tophail, London: 1708. After Pocock's translation this has been the most influential version.

29. For his biography, see Hearne, T. in Doble, C.E. [ed.] Remarks and Collections, Oxford Historical Society, 1885, Vol. X, 245-6; also Chalmers, Biographical Dictionary, XXIII, London: 1815, 293-9.

30. Ockley, S. The History of the Saracens, London: 1718. The 'Preface' to the second volume is also autobiographical.

31. Gibbon, E. Decline and Fall, ed. Bury, VI London: 1909, 4, Footnote 8.

32. Ockley, S. The Improvement of Human Reason, . . . op. cit., "Appendix", 163-95.

33. It is interesting to note that Ockley's publication coincides with the date and rescue of the British sailor, Alexander Selkirk, whose experiences formed the basis of Defoe's The Life and Surprising Adventures of Robinson Crusoe. It has been shown that Hayy was also used by Defoe in the first part of the novel which appeared in 1719. There was in fact a flood of publications about individuals who, like Hayy, grew up on an island to be discovered later, 'destitute of language' but 'more like a Philosopher than a savage, having learned a great deal about the world and about God' as in Kirby, J. The Capacity and Extent of Human or More Commonly Known as Automathes, 1747.

34. Dudley, E. and Novak, M. The Wild Man Within: An Image in Western Thought from the Renaissance to Romanticism, Univ. of Pittsburgh: 1972.

35. Eichorn, J.G. Der Naturmensch, Berlin: 1783.

36. For a survey of attitudes towards children, see Ariés, P. Centuries of Childhood, New York: 1962.

CHILD CARE THROUGH THE CENTURIES

Alice Ribbink-Goslinga

There are different ways of looking at child care through the centuries and its development. Over 400 years before Christ, Socrates is supposed to have admonished his fellow Athenians for caring so little for their children in their concern with gathering riches, which they would eventually have to leave to these same children. Not much later, Plato wrote 'Childhood is the key to the understanding of continuity and change'. Their contemporary, Hippocrates, the founder of medical science and the first medical writer we know of, pointed out special features of diseases in childhood. Just before the Christian era, Lucretius (96-55 B.C.) recommended tolerance for the slow growth to maturity as this was natural in the child. Celsus, who lived from 25 B.C. to 50 A.D. first stated in so many words that children should be treated entirely differently from adults. This being the case, why did it take almost 2000 years for theory to be brought into practice?

The fault may lie with Soranus [98-117 A.D.] who relegated the diseases of infants and children to midwifery. A precedent was thus established which was to last down to our day and 'this association was to hamper and obstruct progress in the study of diseases of children until the mischief of it began to be recognised at the end of the last century'.¹

When physicians did write about the diseases of infants and children, this amounted to little more than a mention. Sometimes a few chapters of a medical treatise would be devoted to midwifery. The early Greek and Roman writers who included mention of the diseases of children [Galen, Oribasus, Aetius, Paulus Aegineta] were much quoted right up

to our times. Paolo Bagellardi² may well have been the first to write a treatise entirely devoted to the diseases of children in 1472 and this initiated a stream of such publications, mainly in Latin. None of these were very original as many writers did not hesitate to resort to sheer plagiarism. E. Roesslin's Rosengarten written in German and published by Johann Preuss of Strassbourg in 1512, had the advantage of being very detailed and as such was considered an authority for well over 200 years and translated into many languages. What all these books had in common was that they did not digress far from midwifery and were intended for laymen, keeping health care of infants and children within the domain of the parents. Children were cared for at home, never in hospital, and doctors were not involved. If parents could not cope with a sick child such a child could be left at an orphanage, occasionally being taken back upon recovery.

Human life as such had little value, and the life of a child was worth even less. The fact that this attitude to life in general was exacerbated in the attitude to children can be interpreted as a lack of empathy [Lloyd de Mause³] or a lack of awareness [Philippe Ariès⁴].

Lloyd de Mause observed that:

The further back in history one goes, the lower the level of child care, and the more likely children are to be killed, abandoned, beaten, terrorized and sexually abused . . . the history of childhood is a nightmare from which we have only recently begun to awaken . . . there is something mysterious about the silence of all these multitudes of babes in arms, toddlers and adolescents in the statements men made at the time about their own experience. It is of course not love which the parents of the past lacked, but rather the emotional maturity needed to see the child as a person separate from themselves. A hundred generations of mothers tied up their infants in swaddling bands and impassively watched them scream in protest because they lacked the psychic mechanism necessary to empathise with them. Only when the slow historical process of parent-child evolution finally established this faculty

through successive generations of parent-child interaction did it become obvious that swaddling was totally unnecessary.³

Philippe Ariès emphasised the dilemma:

The idea of Childhood did not exist; this is not to suggest that children were neglected, forsaken or despised . . . the idea of childhood is not to be confused with affection for children: it corresponds to an awareness of the particular nature of childhood, that particular nature which distinguishes the child from the adult, even the young adult . . . People had no idea of what we call adolescence, and the idea was a long time taking shape.⁴

Who is right? Was it a lack of empathy or a lack of awareness? It is precisely the example given by Lloyd de Mause that argues against a lack of empathy and for a lack of awareness. Swaddling goes back to antiquity and was considered an act of compassion!

. . . as for thy nativity, in the day thou wast born thy navel was not cut, neither was thou washed in water to supple thee; thou wast not salted at all, nor swaddled at all. None eye pitied thee, to do any of these unto thee, to have compassion upon thee.⁵

Physicians recommended swaddling mainly because they felt it would 'shape the child' and 'keep the limbs straight'.² In addition it would prevent a child from going on all fours as most other animals did according to Francois Mauriceau, French obstetrician, 1637-1709.

Others believed that incorrect swaddling would have the most dire consequences:

Due to loose swaddling bands, the navel of the infant son of Daniel Klister, aged 8 weeks, suddenly burst open whereby, it was horrible to observe and without help could not be saved, all the small bowel shot out of the abdomen, protruding ever more . . . the poor mite struggled with the protruding



Figure 1

Terra-cotta infant clothed in swaddling bands on frieze of "Ospedale degli Innocente" (Foundling's Home), Florence, Italy by Andrea Della Robbia (1463-1466)

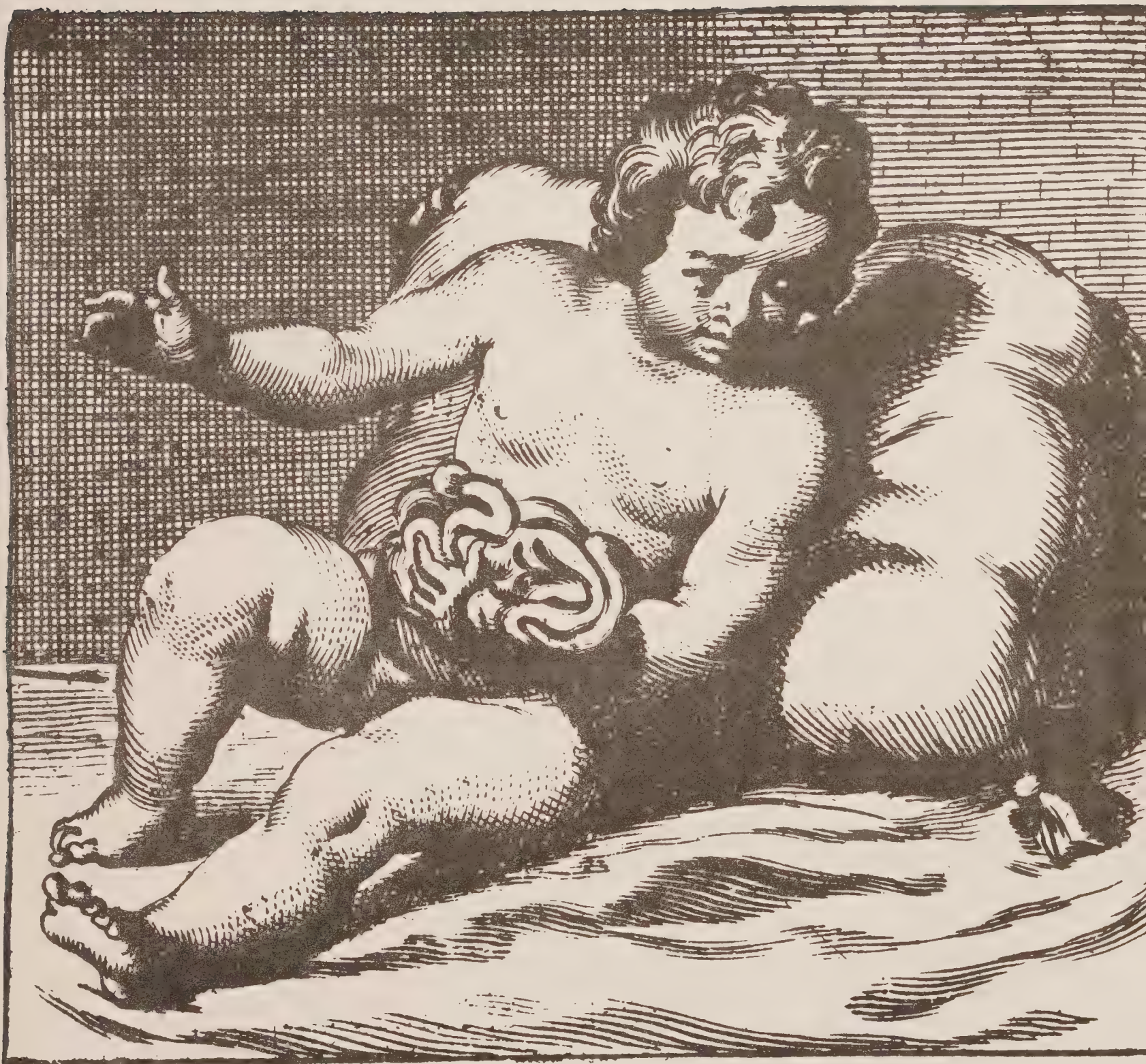


Figure 2

Gastroschisis as drawn by van Meekeren in 17th century.

intestine for the space of 14 hours before death took the upper hand. ⁶

Job van Meekeren (1611-1666), a barber-surgeon of Amsterdam had a lively imagination concerning this case of gastroschisis and other cases which he saw postmortem but left us a 'notebook' full of beautifully drawn anomalies of children.

Swaddling was considered to be essential to good child care by physicians, surgeons and laymen alike until the middle of the 18th century. It may have been the London physician William Cadogan who finally made people aware of the fact that swaddling was totally unnecessary. ⁷

There is an almost parallel development where blood-letting is concerned. Claudius Galen (approximately 130-200 A.D.) advised against blood-letting in children under 14 years of age. Many physicians through the ages gave the same advice. Avicenna Ibn Sina (a late 10th century Arabian physician who supplied guidelines on infant care and children's diseases) recommended that one should bleed the [wet] nurse instead! Francois Mauriceau, the 17th century proponent of swaddling mentioned above, forbade blood-letting in newborns, as did Stephen Blankaart a Dutch physician who wrote the first paediatric treatise written in Dutch. ⁸

This book was exceptional in that Stephen Blankaart did not merely copy from others and he recognized children's anomalies such as gastroschisis as congenital defects. Blankaart also wrote a surgical treatise in which he described surgical intervention for imperforate anus and made the innovative suggestion that neonatal jaundice might be due to biliary tract obstruction. All the more odd that in his paediatric treatise, which was addressed to parents, Blankaart recommended tight swaddling lest the babe catch a cold or . . . jaundice! Seeing child care as the sole prerogative of the parents, his condemnation of blood-letting was not heard by physicians. A countryman of his, Nicolaas Fonteyn from Amsterdam (1600-1650) had previously written a treatise on children's diseases in Latin, which was little more than a commentary on Sebastian Austrius' earlier work, reporting enormous success in treating small infants and children with blood-letting. Guy Patin (1601-1672), a French physician, seemed particularly bloodthirsty. He bled one 7 year old boy with pneumonia for 14 consecutive days! E. Sandifort who studied under Boerhaave, translated

Nils Rosen von Rosenstein's well-known paediatric treatise [Stockholm, 1765] into Dutch in 1768. He edited the material in such a way as to accentuate the benefit of blood-letting in children. By no stretch of the imagination can one maintain that these physicians acted out of a lack of empathy! They were just as much a product of the social structure of their day and age as anybody else. It was this social structure, built up of misconceptions, that determined the prevailing attitude. Rather than being cared for, a child was allowed to exist on sufferance. And they had their uses, especially where blood-letting was concerned. They were often bled to supply rejuvenating blood to adults and they made good assistants when an adult had to be bled.

Even when a child could speak, he lacked the ability to think rationally and therefore a child resembled an animal more than a human being. The period between birth and the age of reason was a period of life that had nothing to offer and consequently should be dispensed with as quickly as possible. The idea behind educating a child was to deliver him from that unhappy state of nonexistence. It was John Locke who kindled the awareness of this misconception with his 'Thoughts on Education' published in 1693. He opened people's eyes with his innovative description of Childhood as a developmental phase distinct from Adulthood. He recommended adapting the development of the child to his natural inclination, instead of expecting them to become adults the moment they were weaned from the nursery. From then on things began to change, although it still took almost 200 years for physicians to be concerned with the health care of children. When George Armstrong opened his Dispensary for Children (mainly for the poor) in Holborn in 1769 he was met with abuse by his colleagues. He devoted his entire life to the care of sick children, but his was a lone cry in the wilderness. He left us a treatise on paediatrics.⁹

Nobody took up his cause when Armstrong died and even he could not imagine a time when children would receive medical care as in-patients in a hospital. The first Hospital for Sick Children opened its doors in Paris in 1802.

It is interesting to note, that while the physicians for the most part merely reiterated what others had written about children's diseases, the barber-surgeons and sometimes the anatomists did publish original observations on children's

diseases. The barber-surgeons of the Middle Ages, who were often regarded as charlatans by the medical profession, were not concerned with medical dogma and kept their eyes open. They not only reported congenital defects of children, but sometimes even attempted to treat these anomalies. The earliest such report may have been that by Jan Yperman a Flemish barber-surgeon, who in 1273 reported the successful treatment of cleft lip and palate and umbilical hernia. His text was reprinted in 1912.¹⁰

He was followed by Thomas Scellinck, who in 1343 reported in his text Het boeck van Surgien,¹¹ the incidence in children of bladder stones [giving a choice of conservative or surgical treatment], prolapsed anus, and hermaphroditism. Three hundred years later, in 1612, the Frenchman Jacques Duval, described the case of Marie de Marin, and claimed his report to be the first on hermaphroditism!

The Englishman John Ardenne [1306-1390] made several references to children's diseases in his text De Arte Physicale et de Cirurgia, which was reprinted in 1922. Possibly the earliest text on paediatric surgical procedures was Cerrahiyeh Ilhaniye which was published in 1465 and written by the Turk Sharapheddin Sabuncuoglu. This text is handwritten and carefully illustrated.¹² The Swiss Felix Würtz [1518-1576] wrote an addendum to the Practica der Chirurgie in 1563, which was translated into English as The Children's Book.¹³ Fabricius Hildanus [1560-1634] was a German surgeon who described 150 paediatric surgical cases including omphalocele, imperforate anus, recto-urethral fistula, etc. In 1640, Alexander Reid recommended Hildanus' treatise on stone cutting: '... the like discourse on this subject was never penned'...¹⁴

J. Scultetus, a German surgeon, wrote his Armentarium Chirurgicum [A Surgeon's Armory], 1662, in which he describes imperforate anus, anal fistula, conjoined twins, etc.

Johannes Fatio, a Swiss surgeon, [1649-1691] is credited with the first systematic description of the surgical treatment of congenital malformations. He operated successfully on neonates and in 1689 he succeeded in separating conjoined twins, a feat which was reported by E. Köning in 1690.¹⁵ He was executed for political reasons.

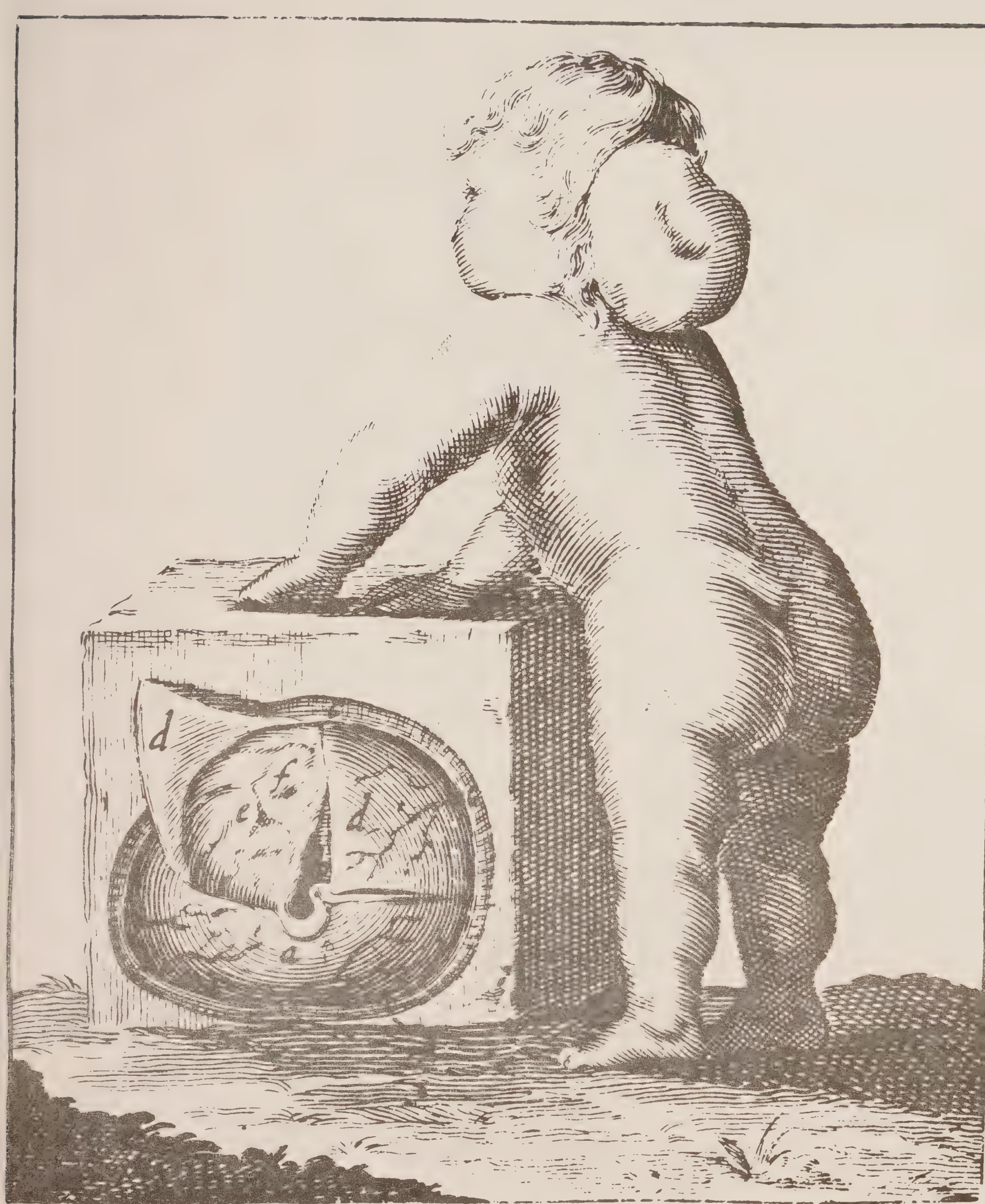


Figure 3

Encephalocoele as drawn by van Meekeren.

Spina bifida

Tab. XI.

fig. 1.

fig. 2
Spina exempta



fig. 1
a. Spina dorsi
bbbb. Spina bifida
c. Cavum tumoris.

fig. 2
d.d. Spina exempta
eee. divisio spinæ
f. cavum tumoris

Figure 4

Spina Bifida, ill. from "Observations Medicae" by Nicolaas Tulp, Amsterdam, 1652.



Figure 5
Hydrocephalus, unknown artist, 1706.

Apart from the [barber] surgeons, several anatomists published observations on children's anomalies. The best known anatomist in this respect was Nicolaas Tulp, 1593-1674, of Amsterdam who was immortalized by Rembrandt in his famous Anatomy Lesson. Tulp made substantial contributions to medical knowledge in general, and he was the first to describe and name spina bifida in children.

Another Dutch anatomist, Fredericus Ruysch, 1638-1731, who wrote Observationum Anatomico-Chirurgicarum Centuria (Amsterdam: H. & T. Boom, 1691), subsequently differentiated between paralytic and non-paralytic forms of spina bifida. Ruysch was the first author to describe congenital megacolon, two centuries before Harold Hirschsprung (1830-1916), whose name that disease now bears.

Where children's diseases are concerned, the pictures drawn by artists, surgeons and anatomists are a better yardstick of the advancement of medical knowledge than the numerous medical tomes. Not weighed down by learned medical preconceptions, they just drew what they saw.

Until the end of the last century, it was mainly the surgeons and not the physicians, who saw sick children and attempted to treat the anomalies they were suffering from. Three notable surgeons, who were 'accepted' by the medical profession, wrote treatises on the diseases of children:

Michael Underwood [1739-1820] in his Treatise on the Diseases of Children with Directions for the Management of Infants from the Birth, [London: J. Mathews, 1784] was a surgeon, considered to have initiated the modern study of disease in childhood. Frederick Still [The History of Paediatrics] comments 'with Underwood paediatrics in England had crossed the Rubicon'. Underwood was the first to describe congenital heart disease and neonatal familial jaundice. He also described congenital pyloric hypertrophy.

While one surgeon may be called the 'Father of Paediatrics' as we know it today; another surgeon may have been the 'First Paediatric Surgeon' to treat children in the world's 'First Children's Hospital' in Paris, mentioned above. His name was Paul-Louis Benoit Guersaint (1800-1869) and he wrote: Notices sur la Chirurgie des Enfants, Paris: P. Asselin, 1867.

J. Cooper Forster may have written the first textbook on the

surgical diseases of children: The Surgical Diseases of Children (London: Parker & Son, 1860). A surgeon at Guy's Hospital in London, he was a strong advocate of the use of chloroform, especially for children: 'Under the present circumstances we are never justified in inflicting severe pain on children'. This was a complete reversal of the attitude to children that had prevailed for so many centuries. Even in the beautiful illustrations of his book one can feel the compassion this man must have felt towards children.

Proper child care, as we know it today, could only get under way after a general change of mentality. The great advance in paediatrics and paediatric surgery of the last century was enabled as much by this new awareness of childhood as by medical progress. One of the tenets of paediatric surgery is that it matters not who should treat the child, but how the child should be treated. To quote a famous surgical pioneer of this century, Sir Lancelot Barrington Ward:

'The adult may safely be treated as a child, but the converse can lead to disaster.'

REFERENCES and NOTES

1. Still, G.F. The History of Paediatrics, 1931.
[Reprinted by Dawsons of Pall Mall, 1965]
2. Bagellardi, P. De Infantum Aegritudinibus et Remediis, Padua: 1472.
3. de Mause, L. The Evolution of Childhood, New York: The Psycho-History Press, 1974.
4. Ariès, P. Centuries of Childhood, [Translated from French], New York: Jonathan Cape, 1962.
5. Holy Bible, Ezekiel, Ch. 16, vs 3.
6. Van Meekeren, J. Heel-en Geneeskonstige Aenmerkingen, [Surgical and Medical Notes], Reprinted by Stafleu, Alphen a/d Rijn, 1979.
7. Cadogan, W. Essay on the Government of Children from their Birth to Three Years of Age, 1748. Cadogan is called the "Father of Child Care" [see Randle-Short, M. & J. Life of William Cadogan, Bristol: J. Wright, 1966].
8. Blankaart, S. Verhandelinge van de Opvoeding en Ziekten der Kinderen, 1684. Reprinted by Hollandia, 1966.
9. Armstrong, G. An Account of the Disease most Incident to Children from their Birth till the Age of Puberty, 3rd edn, London: T. Cadell, 1777.
10. Yperman, J. Cyrurgie, Ghent, 1273. Reprinted by van Leersum Press, Leiden, 1912.
11. Scellinck, T. Het boeck van Surgien, 1343. Reprinted in Ned. Tijdschr. Geneeskde, Amsterdam, 1928.
12. Numangoglu, I. J. Pediatr. Surg. 1973, 8, 547-8.
13. Würtz, F. Ein schönes und nützliches Kinderbüchlein, an addendum to Practica der Chirurgie, Zurich: 1563, with an English translation The Children's Book, London: Gertr. Dawson. 1656.

14. Schärli, A.F. deals extensively with the paediatric aspect of Hildanus' medical records in Z. Kinderchir. 1984, 39, 296-301.
15. Rickham, P.P. 'Johannes Fatio: his life, work and terrible fate' Z. Kinderchir. 1984, 39, 289-95.

**JOHN JONES PHISITION
ON
THE PRESERVATION OF BODIE AND SOULE
1579**

John Cule

There is a story told in Wales of a bus load of Welsh football supporters crossing at Check Point Charlie in Berlin and being subjected to Passport Control. The East Germans would not believe that in a coach for forty passengers, there were 25 Joneses and 10 of them were John Joneses. I have had a similar problem with John Jones Phisition, who is not to be confused with any other John Jones and particularly not with John Jones M.D. (1645-1709), Chancellor of Llandaf, who wrote The Mysteries of Opium Revealed (1700) and lived in the next century.

John Jones Phisition is believed to have studied at the universities of both Oxford and Cambridge and to have practised medicine at Bath, Buxton, Derby and Nottingham.¹ It is not surprising to learn that he was a Welsh speaking Welshman for his published works contain many apposite Welsh phrases. He himself records that his mother was 'two and fiftie and upwarde' when he was born. In discussing weaning, he does not regard it as unusual to breast feed for 'some more than three yeares'. Particularly he felt it best that 'the olde womans childe do sucke longer than that of the yong and lustie Nurce . . . ;' commenting from remarkable personal experience, 'I do remember that I was able to beare a stoole for my good Nurce when I would have suckte. Notwithstanding I do not appoint everyone to suck so long.' ²

The next obstacle was in the title. Amongst the decaying volumes in the shops of second hand Welsh book dealers are a

large number of distinctly religious bent. And so a book entitled Of the Preservation of Bodie and Soule in Healthe by John Jones is not likely to alert the paediatric book collector to an item of the greatest rarity and, in fact, the second book to be written in English on child health. Indeed, he is the second Welshman to have written in English on paediatrics. For the other, if you will allow his adoption as his fellow Welshmen did, was Thomas Phaire [1510-1560] of Cilgerran. Although, in form, Jones' book does not resemble The Book of Children by Thomas Phaer³ which has a much more clinical ring to it, it does consider the health and upbringing of infant and child from a medical viewpoint.

There is only the briefest hint in the full title that parents might find the volume of interest.

The Arte and Science of Preserving Bodie and Soule in Healthe, Wisedome, and Catholike Religion: Phisically, Philosophically and Divinely devised: By John Jones Phisition.

Right profitable for all persones: but chiefly for Princes, Rulers, Nobles, Byshoppes, Preachers, Parents and them of the Parliament house.

John Jones' book, as you can see, is not easily recognisable from its title as one dealing with children. He explains it - indeed almost apologises for it - in the Epistle Dedicatorie to the most excellent and renowned Princess Elizabeth, by the Grace of God Queen of England, France and Ireland.

'The Science or Doctrine of this firste Booke, work, or age, as it is termed of the Greekes not farre amisse, Pardetrophia: So I entitle it, not altogether improperly, The Arte and Science of preserving Bodie and Soule'.

The word the Greeks had for it is indeed not far amiss. Pardetrophia, or allowing for the free spelling of the sixteenth century, Paedatrophia suggests the failure of the child to develop properly, or even actively wasting. John Jones considers the reasons for maldevelopment in infants and children and its active prevention or correction. The

aim is a preservation of physical and spiritual health by a prophylactic regimen. He had no doubt of the value of the precept of the Latin tag Mens sana in corpore sano, and vice versa, although he does not quote it. The health and well being of the child depended on its nourishment, its environment, its upbringing and education, both in body and in soul. It showed a very proper and sympathetic Tudor attitude.

The Tudor period in medicine was as complex in the variety of its practice as medicine is today. Practice and precept always differ and have varied contemporaneously. The majority of doctors in all ages have relied more on the comforts of empiricism, than on the ephemeral doctrines of science.

In the 1540's three books had appeared that eventually were to revolutionise medical thinking, although at the time they were to have remarkably little effect on medical practice. Leonard Fuchs' De Historia Stirpium [1542] was to set the standard for scientific botany and to make possible the development of medical botany. Andreas Vesalius' De Fabrica Humani Corporis [1543] was to set the standard for scientific anatomy and pave the way for further studies of dynamic anatomy and physiology. Nicolaus Copernicus' De Revolutionibus Orbium Coelestium [1543] with its shift of emphasis from a geocentric to a heliocentric universe should have laid bare the false premises on which astrological medicine had been developed with its ideas of microcosm and macrocosm illustrated by Zodiac Man. The complicated calculations required for making diagnoses and deciding on treatments were still aided by books of tables and medical ready reckoners. Galenical ideas of diseases based on the four humours and Galenical ideas of treatment predominated.

Linacre, the founder of the College of Physicians was essentially a conservative; a medical humanist who translated Galen into Latin - an exercise also indulged by John Jones⁴ - enabling contemporaries to read the works at first hand, not in the editions confused by the mediaeval commentaries. For Galen was a sensible physician whose ideas merited study. The ideal of the age was the scholarly physician who was at the top of the medical Chain of Being in Tudor times. And scholarship set the standard by which the scientific change of the centuries to come could both be measured and encouraged.

At the same time it was a period for 'home medicine' and popular translations into the vernacular from classical sources. Men wrote in English so that their works could be better understood - and this also meant that they would be likely to sell better. More than ever it was a time to choose a doctor for his commonsense and eclectism in his treatment.

The great naturalists were laying the foundation of medical science but in their own age their work did not contribute to clinical practice. It was from others, like John Jones, that we may learn the current ideas of conservative medicine. Before we consider the content of John Jones's book, we should try to see it in a contemporary setting.

Some 400 000 copies of medical works were printed in English between 1486 and 1604, constituting 3% of English publishing. The Welsh authors were significantly amongst the 'best sellers'. In the course of normal wear and tear probably less than half of these remained in circulation by 1604. Although Welshmen contributed a number of these English editions, there were no medical works printed in Welsh during this period. Nevertheless, some were soon translated into Welsh and have survived.⁵

Thomas Phaire, who was greatly admired by John Jones, is best known for his Book of Children, which bears strong resemblances to Rösslin's Rosegarten, of which Rösslin's son published a Latin translation in Frankfurt, known as De partu hominis in 1532. There was an English translation by one Richard Jonas of whom we know very little except that he was 'a diligent and studious clarke'. His book was called The byrth of mankynd, newly translated out of Laten into Englysshe. London: T.R.[aynalde], 1540. Although Richard Jonas' translation bears only the initials T.R in the colophon, this was almost certainly the imprint of the well known printer Thomas Raynalde, who also produced the works of Robert Record.⁶

The difficulties of establishing the provenance of a single work is shown in the next edition in 1545, which carried the claim that it was corrected and enlarged by Thomas Raynold, physician, and omitting altogether any acknowledgement of a translation by Richard Jonas. It came from the press of Thomas Raynold (or Raynalde), but there is no certainty of his presumed identity with that of Thomas Raynold, the physician. The title page reads The byrth of mankynde,

otherwise named the woman's booke. Newly set furth,
corrected and augmented. By Thomas Raynold phisition, 1545.

There was another edition, edited by 'Thomas Raynald Physition' in 1552, showing in the colophon 'Imprinted at London by Tho. Ray.' which could indeed be short for Thomas Raynold.⁶

To complete the paediatric publishing list before Phaire, there were at least three earlier writers on the Continent: Paolo Bagellardo on De aegritudinibus infantum published in Padua, 1472; Bartholomaeus Metlinger's work on infant hygiene, Regiment der jungen Kinder, published in Augsburg in 1473; and Cornelius Roelants of Mechlin who published a paediatric tract about the year 1483.

Thomas Phaire had access to Rösslin's book. His own Book of Children is at least derived from it, though it is not an exact copy. Phaire was a great linguist and translator. There were several other works published compositely with his Book of Children. His Regiment of Life derives from the Regimen Sanitatis Salerni, via his translation of Jehan Goeurot's L'entretènement de vie. Phaire's editions also contain a Treatise of the Pestilence, which he translated from Nicholas de Houssemaine's Régime contre la Peste. Edward Whitchurch, the printer of the earliest book in Welsh, Yny lhyvyr hwnn, 1546 made several editions of Phaire's work, which was almost immediately translated into Welsh by Elis Gruffydd sometime between 1544 and 1550.⁶ John Jones who was familiar with Phaire's work, came down firmly on the side of commonsense and moderation, agreeing with both Phaire and Raynold on the general tenor of the regime for bringing up the child.

John Jones warned that although God had created a babe perfectly, subsequent mismanagement could adversely affect it and it should be brought up and preserved . . .

'without all pampering or pyning, dandling or dulling, cockering or clowning, and neyther of one depraved, sickly, nor deformed: whereof Phair more amply than Raynoldes in his booke of the infirmities of children hath shewed his judgement.'⁷

He stresses the importance of education and environment, concluding wisely that 'for the healthie, the meane is best'.

He is strong on prophylaxis and deals with prevention of the squint. Phaire and the Arabs before him had long passages on the treatment of the squint using the same rationale.

'Here I think goode to remember, least it might be neglected in what sorte the light in the Chamber is to be placed . . . bycause it is a thing the Babe will be muche delighted wyth, that no discommoditie to the childe do arise thereof, as there will not, if you either sette it righte afore him, or cleane foorth of sight. But, if sidelings, it may cause the Infant to prove squint or gogle-eyed . . .'

8

In common with the popular medical lore of his times and since, some of the advice is tainted with the Mephibosheth fallacy. Jones warns the nurse of the danger of holding the baby . . .

'too long by the feeble armes, upon the weake and tender legges, not enticing them to goe too soone, least through the wayght of the body it may catch hurt . . . making it crooke legged, and out shouldered, as it seemeth by the Brittish or Welsh Apothegme, the Saxons were that firste inhabited this our land Brittainne.'

Ye Sayson dewron diege
Paluise coyse kessigge

The Saxons bold and furious
Like Mares had legges and shoulders. 7

It makes it sound to modern ears that the deformities might well have resulted from a rachitic diathesis. (cf. Fildes⁹)

Medicine was, of course, but part of the learning that befitted a Tudor gentleman and polymath. The wholeness of the Christian man was the ideal. Sir Thomas Elyot

[1499?-1546] was the compiler of another popular work, partly based on the Regimen Sanitatis Salerni and known as the Castel of Helth,¹⁰ which went through sixteen editions between 1536 and 1595. It was translated into Welsh sometime between 1544 and 1550 by the same Elis Gruffydd who translated Thomas Phaire. Sir Thomas Elyot also wrote a book called The Governour,¹¹ which dealt at length with the upbringing of children. He felt they were best left at home in the care of women until the age of seven, and should then continue their education at home with a tutor. These ideas were more likely to have influenced the form of John Jones' book than those expressed by Phaire in the Book of Children. And we know, because John Jones told us, that he read Phaire, Elyot and the other Welsh medical writer in English Robert Record of Tenby.

Thomas Elyot stressed the importance of education on the formation of character. And education not only in book learning, but in music, painting and physical exercise. A general education was recommended until the age of fourteen.

John Jones, for his part, cites his approval that in sports and pastimes . .

'comely dauncing is most commended [for the nursel]. As wel for preserving the healthy spirites, as also for strengthening the sound bodie . . . furthering the viy branches of Prudence, as proveth Sir Thomas Eliot in his Governour.' ¹²

and recommended that the child should . .

'learne to ride, runne, wrastle, tosse the light launce, and throw the small dart.' ¹³

There has been a tendency amongst certain types of modern historian to look upon the great figures of history in a psycho-analytical light. The result often has the same sort of tragi-comic effect as was put so admirably by Miguel de Cervantes, in Don Quixote but lacking the truth and the humour:

'Everyone is as God made him and often a good deal worse.'

In searching for sources on John Jones, I came across a commentary in the Journal of the History of Ideas [1974] by an American of the name of Boyd M. Berry.¹⁴ I must admit that this is not a journal amongst my usual reading and the article deals as only a psychologist could with The First English Paediatricians. So he got that wrong to start with for he is writing of the Welshmen 'Jones particularly, and Phaire to a lesser extent, [who] articulate a paranoid vision of the world, which resonates with the utopian and apocalyptic thought of the period.'

'Glimpses of the end of the world mesh in their writings with fears of personal physical disintegration; the latter are projected onto a society objectively in turmoil. The world's body, as well as the bodies of these men, seemed to be in danger of dissolution.'

This is a splendid example of a shallow erroneous judgement made in pompous psychological terms, unrelated to the normal human feelings of the two warm characters to whom he refers. The Welsh are frequently described as feeling misunderstood, even to the extent of paranoia by those who do not understand the term or the Welsh. But Jones and Phaire, and probably the majority of their countrymen in Tudor times were certainly nothing like Mr Boyd M. Berry would have them. John Jones' book is written with good humour and gives a common sense approach to the care and upbringing of children as seen by a practical doctor. Naturally, it reflects Tudor thought; it is Galencian and Platonic in its approach. It warns against excesses in treatment. It was a good book for contemporary doctor and patient alike. And unlike Dr Spock, he never felt the need to recant.

It is one of his six known books, if you count Galen's Elements as one. The children's book was written and published by 1579 and refers to his other works in the text:

A briefe excellent and profitable discourse of the beginning of all living things, London: W. Jones, 1574.

anr issue with additions. Hereunto is anexed Galens Booke of Elementes . . London: W. Jones, 1574.

A diall for all agues, London: W. Seres, 1586.

The arte and science of preserving bodie and soule in
healthe, London: H. Bynneman, 1579.

The bathes of Bathes ayde, London: Thomas East for
Wm Jones, 1572.

The benefit of the auncient bathes of Buckstones . . .
London: Thomas East and Henry Myddleton for Wm Jones, 1572.

H. Bynneman, the publisher and printer of The Arte and Science . . . acquired the presses and the business of Thomas Raynalde, who also published Robert Recorde of Tenby. (1510-1558) His Urinal of Physick was a very popular book, of which there were at least six editions published between 1547 and 1665.¹⁵ Robert Recorde wrote 'this little treatise to all men in common, that they may learne to have some knowledge of their owne urines, and thereby may be better able to instruct the Phisition, in this thing at the least.' The title page shows the standard representation of the physician holding aloft and gazing at the urinal. It is similarly used to illuminate capitals. In fact, the same illumination occurs in John Jones' book as can be seen in the Urinal of Physick, with the urine gazing physician illuminating the capital letter 'T', in both of which the cross of the 'T' is broken i.e. both from the same font.

John Jones' children's book is divided into three parts: 'The first tendeth to all things in a Nurse requisite'; 'The seconde, howe children everye waye are to bee ordered'; 'The third, of their education, catholike religion, wisdom, obedience, and trades, wherein infants, yea al Christians ought to be instructed.'¹⁶

The Nurse came first and there is no doubt that John Jones had a good eye for a nurse. Thomas Phaer had come down firmly on the side of the need for the mother to nurse her own child. 'It is also necessary and comly for the mother to nource her owne childe.' If not you must be well advised in the selection of a nurse.¹⁷ John Jones begins with an apology for those British mothers who fall short of this ideal. Then he spares no detail in his recommendations for the choice of the ideal nurse, though he stresses that he would have preferred the natural mother.

'Neverthelesse, by reason of weaknesse,
sicknesse, lacke of milke, travell or being
again quickly with childe, the mothers as

well of Princes, Noble and worshipfull children, as of the Merchaunts and Commoners, cannot, or ought alwaies, [although they wold never so wishly] nurse their Babes themselves in England, let Syr Thomas Moore affirme it to be never so usuall with every dame in Utopia.' 18

Then John Jones gets down to accepting the fact that usually it will come to 'Howe the Nurse must be chosen'. And I do not discover much of Mr Berry M. Boyd's 'death wish' here.

'The Nurses face shall be ful of favour, and comely coloured, as willeth Eucarius, and therewith faire, broade breasted, and wel neckt, as sayeth Galen, without gogle eyes or loking a squint, say I, as she that is not separated from goodnesse. For as the Hebrues do affirme, Tou signifieth as wel faire as good, as Tege doth in our own tong, the Brittish or Welch.' 19

Jones expresses the comfortable belief that goodness and natural beauty usually co-exist in the same person. He adds the warning that the beauty achieved by artificial colouring is a token of the colour and shape they shall be in hell. 19

He carried his principles of moderation in all things to the size of the nursing breast. He misliked the overgreat and the oversmall. The first because they had too much milk, and the second because they had too little. 20

'Furthermore, through sucking of great breastes, the children are made flat or croked noses, like to him that good Traiane the Emperor was jocund with, whose words I have turned into English as I found them in the Latin.

If thou thy jawes dost open wide,
and nose to Sunne do laye:
Then mayst thou tell us perfitly,
what time'tis of the day.

Meaning that his long hooked crooked Nose did caste a shadowe upon his teeth like a Dial; by the Nurse to be helped, if she will

alwayes when the child sucketh, depresse hir
breaste with one finger above the teate and
the other underneath.' 20

If the child was to prosper then the nurse had to be
contented and happy and John Jones was ever mindful of her
comforts.

'And to the Nurse at middle of dinner a small
draught of Gascoine wine is not hurtful.' 21

Writing of the 'discomodities of venery' in a nurse, he
quotes Montuus' suggestion of suppressing desire with the
judicious exhibition of lettuce. I feel he does not regard
this as very efficacious for he concludes:

'To make the matter sure, Caius Fabrius the
Consul, closed the Nurse with his childe in
the Temple of the Virgins. But this I like
not so wel of, for as much as it maye not
only change the goodnesse of the milke
through over much solitarinesse, but also dul
the spirites.' 22

Naturally, too, for a Welshman, music had to be considered
under the heading 'What pleasure children have in musicke.'

'Whereupon the best Nurses, but especially
the trim and skilfull Welch women, doe use to
sing some preaty Sonets, wherwith their
copious tong is plentifully stoared of
diverse pretie tunes and pleasaunt ditties,
that the children disquieted might be brought
to reste: but translated never so well, they
want their grace in Englishe, for lacke of
proper words: so that I will omit them.' 23

He then adds in a prudish outburst 'as I wishe they would
theyr lascivious Dytties, wanton Lullies and amorous
Englins.' 24 If the nurse herself felt annoyed, Jones
recommended that she should sing a short psalm.

Chapter XV cautions nurses 'how ware they must be in taking
of medicines, that they marre not themselves and the childe
also through advice of unlawful practitioners.'

'If she happen at any time to be over solible

or over costive, she shall not without counsel of the learned and expert Phisition, send to the Pothicarie nor take forthwith violent medicines of every presuming practitioner that offereth himself each where, vayne Paracelsian, tatling dame, and only or named Chirurgion, or Apothicary that intrude themselves into this facultie . . .²¹

He shows his anxiety that the proper form of professional courtesy is followed. That advice should be sought from the physician on the medicine that was to be supplied and that it was not to be the new chemical remedies of the arrogant Paracelsus.

John Jones deals with diets and regimens and 'natural' foods and eschews the Paracelsian remedies. He gives no lists of prescriptions, perhaps because he hints that there is more to come, for 'the author hath touched so many matters in briefe in this firste booke, that at large shall be handled in the other five'.²⁵ But alas this was not to be.

I have not been able to establish his medical qualifications. He refers to himself as a graduate in physic, and says that he lived 'upon his practice by lawful grace of the Universitie, and hath had no other maintenance, but for these one and twentie years.' In Cambridge only one M.D. was awarded between 1500 and 1541, but there were 63 between 1542 and 1589. At Oxford the numbers were less, but between 1571 and 1602, 19 doctorates were awarded. There were some 300 bachelors of medicine in the reign of Elizabeth.²⁶

John Jones, physition emerges through the pages of his book as a pleasant common sense doctor who loved life and who loved children. His book expresses the accepted beliefs of Tudor times, but he tempers them with moderation.

He had an only son Morgan,²⁷ for whom he desired the true satisfaction of the old Welsh mottoe Gwell dysg na golud 'because they ought more to rejoyce and glory in knowledge their children have, than of the abundaunce of goods they leave them.'²⁸

This conclusion sums up the theme of his book. The liturgical echo of its title was surely more than coincidence with the words 'preserve thy body and soul in

health'. By the time of Elizabeth the First in the 1559 Prayer Book, I am reliably informed by Doctor John Guy that 'preserve thy body and soul' appeared in the vernacular in the rite of holy Communion and must surely have inspired John Jones' title.

Corpus et sanguis Domini nostri Jesu Christi custodiat
corpus meum et animam meam in vitam aeternam.

REFERENCES and NOTES

1. Dictionary of National Biography.
2. Jones, J. The Arte and Science of preserving Bodie and Soule in Healthe, Wisedome, and Catholike Religion, London: Henrie Bynneman, 1579, 43.
3. Phaer, T. The Boke of Chyldren, Reprint of 1553 edition. Edited by Neale, A. V. and Wallis, H.R.E. Edinburgh & London: E. & S. Livingstone, 1955.

For a full list of Thomas Phaer's publications and related works see:

Cule, J. Wales and Medicine. A source-list for printed books and papers showing the history of medicine in relation to Wales and Welshmen, Aberystwyth: National Library of Wales, 1980. Entries 1682-1724 and 2748-2751.

For a brief biography of Thomas Phaer and a fuller bibliographical study see:

Cule, J. 'Thomas Phaer M.D. of Cilgerran 1510?-1560' Trans. Hon. Soc. Cymmrod. 1979, 105-28.

4. Jones, J. A briefe excellent and profitable discourse of the beginning of all living things. Hereunto is anexed Galens Booke of Elementes . . . London: W. Jones, 1574.
 5. Slack, P. in Webster, C. [ed.] Health, Medicine and Mortality in the Sixteenth Century, Cambridge: Cambridge University Press, 1979, 239.
 6. Cule, J. 'Medical Translations in Sixteenth Century Wales.' Actas XXVII Congreso Internationale de Historia de la Medicina, Barcelona: Academia de Ciencies Mediques de Catalunya i Balears, 1981, 233-7.
- Cule, J. 'Thomas Phaer M.D. of Cilgerran 1510?-1560' op. cit.
7. Jones, J. The Arte and Science . . . op. cit., 50.

8. ibid., 49.
9. Fildes, V. In these proceedings.
10. Elyot, T. The Castel of Helth, c. 1536.
11. Elyot, T. The Boke called the Governour, 1531.
12. Jones, J. The Arte and Science . . . op. cit., 22.
13. ibid., 73.
14. Berry, B.M. J. Hist. Ideas 1974, 35, 561-77.
15. Recorde, R. The Urinal of Physick, London: Reynolde Wolfe, 1547.

For a list of other editions see Cule, J. Wales and Medicine. op. cit. Entries 1931-1938.

16. Jones, J. The Arte and Science . . . op. cit., 4.
17. Phaer, T. op. cit., 18.
18. Jones, J. The Arte and Science . . . op. cit., 5.
19. ibid., 6.
20. ibid., 11.
21. ibid., 27.
22. ibid., 14.
23. ibid., 13.
24. The englin (mod. Welsh englyn)- an epigrammatic stanza in strict metre form.
25. ibid., 114. Heading of Chapter 45.
26. McLean, A. Humanism and the Rise of Science in Tudor England, London: Heinemann, 1927, 188.
27. Jones, J. The Arte and Science . . . op. cit., 105.
28. ibid., 77.

CHILD CARE IN MEDIAEVAL ISLAM

H.D. Isaacs

ISLAMIC LAW ON CHILDREN

Long before Islam appeared on the scene the great majority of the Arabs lived a nomadic life; only a few settled in towns situated in the more hospitable and fertile parts of Arabia. Their allegiance was first and foremost to the tribe. Within the tribal organization of Arabia the smallest unit is that of the ahl,¹ the tent or the household. It consists of a single family, of which the father is head and the other members are his direct descendants. In their own interests and that of the society amongst whom they live they are reckoned as belonging to his stock, and his actual physical paternity therefore is a matter of importance. There was a time before the coming of Muhammad, when, according to Muslim traditions, the principle ruled that 'the child follows the bed', i.e. that the child reckoned paternity from the man, whoever he might be, who was married to its mother at the time of birth.² Islam modified the principle by declaring that a pregnant woman, when her husband dies or divorces her, cannot be re-married until the birth of her child, which is reckoned by Muslim law as begotten by him and as legitimate.

As a general principle a child born in wedlock is regarded in Islam as legitimate and as being the child of the wife's husband, provided it is born not less than six months after cohabitation of husband and wife.³ However, if the father wishes to acknowledge a child born less than six months after his cohabitation with his wife, it is legitimate.

The principle 'that the child follows the bed' is coupled in the oral traditions of the prophet Muhammad with the

declaration that 'the adulterer gets nothing'; that is, the child belongs to its mother's husband at the time of its birth even if he should not be the father.

In Islam, it is sufficient for the father to acknowledge cohabitation with his wife or slave to establish the legitimacy of the child. If circumstances, such as the question of succession should require the mother to prove a child to be hers, her statement must be supported by the midwife or some other respectable Muslim woman present at the birth. Seeing that concubinage is lawful in Islam, it is not necessary for the mother of a child to be married to its father in order for it to be declared legitimate. Thus, the child of a slave-woman by her master or by a man to whom she has been lent by her master, is as legitimate as his children by his wife and stands on a level of complete equality with them. Cases of repudiation of children by parents are rare, for sons in particular are regarded as a precious possession.⁵ If however, a husband suspecting that a child borne by his wife is none of his and does not wish to acknowledge it, he must denounce it soon after it is born, and follow up his denunciation with an accusation of adultery against his wife in accordance with the procedure of the Li'ān (disavowal).⁶ He cannot, however, denounce the child simply on the ground that it does not resemble him in appearance.

It is seldom that any stigma attaches to the illegitimate child in the Muslim world. At the present time though 'son of whore' is a common term of abuse, 'bastard' is rarely used except in Iran, where the implied insult can seldom have any truth in it, for the reason that the usual penalty is death.⁷

On the question of responsibility for the support of the children the Koran makes a few regulations. It is conceivable that where the parents lived together there was no need to formulate any laws on the subject, particularly where the children were regarded as precious possessions. The need for legislation arose when matters were complicated by divorce of the mother. The two pertinent sections of the Koran follow immediately on passages dealing with divorce, and lay it down that mothers should breast-feed their children for two full years,⁸ and that during this period the mothers should be fed, clothed and looked after by the father. The Koran imposes no compulsion on the divorced mother to suckle her child, and if she undertakes such

responsibility she is entitled to a fee for her services like any other wet nurse who may be hired.⁹

When parents are living together they are jointly responsible for the upbringing of their children, the father providing the material necessities, and the mother caring for the welfare of their bodies and for their mental and religious training. In the rearing and general management of their children the Muslims are chiefly guided by the Koran and the Hadīths, which are the oral traditions of the prophet Muhammad. In case of dispute the mother has the right to custody of the children during their infancy. The mothers generally enjoy, in greater degree than the fathers, the affection of their children. According to some Muslim sects, guardianship of a child continues with the mother until the age of puberty.¹⁰

For children without parents or kinsmen to take charge of them the Prophet seems to have made no provisions, but the pious foundations, known as Awqāf [trusts] provide for the poor, and foundlings are an express charge on the whole Muslim community.

During the period of their minority, children are nominally in the charge of an elder under one of three kinds of guardianship. The first kind of guardianship is that which concerns the care and upbringing of infants, where the parents are jointly concerned. If the mother is divorced, it is she who is entrusted with the care and welfare. If the mother dies her mother, or failing her, her maternal grandmother takes charge. Only if these relatives are not available is the father entrusted with the care of a child up to the age of seven.

As regards the second and third kinds of guardianship concerning the marriage of children and the care and management of the property of the minors, it is the privilege of the father to exercise such guardianship; failing him, it falls to the grandfather or a person mentioned in the grandfather's will. The guardian of an orphan has powers which are similar to, though less extensive than, those possessed by the father.

So far as I have considered it, the social status of the child in Islam was not greatly different from that under Western systems. Health care and the study of diseases and treatment of children came under some primary form of

paediatrics practised by doctors in medieval Islam.

PAEDIATRIC LITERATURE

Of all the branches of Arabian medicine paediatrics and the art of midwifery were the least studied. The paediatric literature from Arabic sources is meagre. The first work on obstetrics in the Arabic language is a translation of Hippocrates' work known in Greek under the double title Peri Gones and Peri Phusios Paidiou, (On the Sperm and the Nature of the Child).¹¹ This work is mentioned by Ibn al-Nadīm in his al-Fihrist [Index], as having been translated by Ibn Shahadā al-Karkhī¹² concerning whom he gives very little further information other than that 'he translated badly from Syriac to Arabic'.¹³ Of this work there are three manuscripts extant:

1. Istanbul Ayasofya No. 3632 [XIII Cent.]
2. Florece Laur. 226/173 [XIII-XIV Cent.]
3. Mecca Haram. Tibb 45/3 [XVI-XVII Cent.]

Used as a manual it was extended later by other writers.

IBN AL-JAZZAR [895-979]

The first among Arab physicians, as far as we know, to write a separate treatise on paediatrics, was Ibn al-Jazzar [895-979]¹⁴ who studied in Kairuan under Ishāq Ibn Sulaimān al-Israīlī¹⁵ known to the Europeans as Isaac Judaeus. The title of his treatise is Siyāsat al-Sibyān Watadbīruhum (Care of the Children and their Management), a copy of which is in the Biblioteca Marciana in Venice, and according to Dr al-Haila another copy exists at the Escorial which Darenbourg had not listed. This treatise contains 22 chapters. Ibn al-Jazzar gives advice regarding pre-natal, neo-natal and post-natal care. He stresses the importance of breast-feeding and the choice of a healthy wet nurse when mother's milk is insufficient. He quotes Galen to support his claim that mother's milk is the best. He then gives detailed information regarding parturition and management of labour and advises that the umbilical cord should be cut at a distance not more than four fingers from the navel. The skin should be salted at first¹⁶ and he goes

on to say: 'The baby must be bathed in lukewarm water and the skin thoroughly cleaned; mouth and nostrils should be aspirated; and the anus must be inspected and examined by passing gently the tip of the little finger through the anal orifice'. Choosing a wet nurse is very important; she must be healthy, rather young, of a good family, alert and of even temper.

He also discusses ordinary diseases of infancy and he points out the existence of a certain rare abnormality of the skull; namely hydrocephalus which he calls al-Dawus, the cause of which he, naturally, attributes to the formation of gross swelling of the bones of the skull or to inflammation of the brain and its membranes. He also mentions in passing microcephaly, the cause of which is not known and for which there is no treatment.

Among the diseases of infancy and childhood he enumerates the following and to each he allows a special chapter. Otorrhoea which he calls wet ear; for this he recommends ear drops prepared from honey water, solution of alum or old wine. 'Squint', he says, 'could be either congenital or acquired'. There is a chapter on fever and cough, and here he draws on the works of his teacher Isaac Judaeus.¹⁷ He describes teething and its symptoms, such as, incessant crying, sleeplessness, swelling of the gums and cough. For ulcers in the mouth he recommends the application of a powder prepared from saffron, myrrh, crystalline sugar and chalk and, if the ulcer is dirty and the mouth smells, honey and rose water should be added. For vomiting and diarrhoea, which may be a concomitant of teething, he advises the use of pomegranate juice, sour grapes, the rob of apples and chalk powder with mastix or other astringents. For worms, small or large, he gives a prescription made of the seeds of marrow. 'Convulsions', he says, 'may occur in children and cease after puberty'. He quotes Galen and Hippocrates on the disease known as epilepsy. Carrying the flower of paeonia on the body lessens frequent attacks of epilepsy. Ophthalmia and its complications, umbilical hernia, favus and vesical calculus are also discussed in detail. The last chapter of his book is mainly on upbringing and education. His advice is to start when the child is very young. 'Those with bad manners', he says, 'remain so unless they are disciplined early in life'. Ibn al-Jazzar wrote many other treatises on different medical subjects, including one on diseases of the aged. He died well in his eighties.

Among the priceless Arabic manuscripts preserved in the archives of the University Library of Cambridge is one relating to obstetrics and paediatrics. It was acquired by the famous Edward G. Browne, physician turned orientalist, who later, at the turn of this century, became the professor of Arabic at Cambridge. Professor Browne, in his own handwriting, noted that it was a treatise on embryology and physiology. But, reading through its 127 folios, I discovered that seven out of its 50 chapters dealt with diseases of children, their development and education. The manuscript is attributed to Abu al-Hasan Sa'īd Ibn Hibatullāh¹⁸ who was born on 15 January 1045 and died on 29 December 1101. He was a court physician in the service of two Abbasid Caliphs, al-Muqtadī and his son al-Mustazhir. He also served on the staff of the Adudi Hospital in Baghdad.

The title of this manuscript is A Treatise on the Creation of Man.¹⁹ The author here differs from his predecessor al-Jazzar because he deals more with the subjects of sexual matters, menstruation, conception, signs and symptoms of pregnancy and prenatal care. He draws chiefly on Greek sources, particularly Aristotle, Galen, Hippocrates and Soranus. The subject of growth and formation of the foetus receives more attention and there is a special chapter on miscarriage; he differentiates between abortion in the early months of pregnancy and of later months. 'Special attention must be paid', he says, 'to indigestion, nausea and vomiting in pregnancy lest these symptoms get worse and may thus have adverse effects on both mother and baby'. For incessant vomiting he prescribes caraway and cumin mixed with mother's drinks made of grape juice or other fruit juices. He warns against difficult labour. 'Causes of difficult labour', he argues, 'may be maternal; such as, small hips, obesity, or weak muscles that lack expulsive force. Or they be foetal; such as, large size of foetus, abnormalities, or breech presentation'. He also discusses early separation of the placenta and its serious complications. 'If a mother remains four days in labour then you have to save the mother, for the baby is presumably dead'.²⁰ Then he describes how to remove a dead foetus from the mother's womb with little damage to the perineum. For tear of the perineum he advises that it should be cleaned at first followed by the application of dressings containing sarcocolle, myrrh, dragon blood and opium. If the placenta

is retained he recommends the use of suppositories containing hellebore, sulphur, myrrh and ox bile.

He gives sound advice regarding the care and management of the infants; for example, lullabies quieten the babies and help them to sleep. 'For', he says, 'babies like melodies and rhythm'. He supports his claim by quoting a philosopher that of all animals, man alone enjoys music although all have ears. For crying he advises the mother to examine the baby's bed clothes for fleas, or the baby may be hungry or too warm or too cold.²¹ From the age of two onward ordinary food may be given to infants. Weaning should be a slow process during the latter part of the second year. Boiled eggs, old cheese and conserved meat should be avoided for they are heavy foods. Exercise should be encouraged for it prevents the accumulation of 'vaporized superfluities' [vitiated spirits] inside the body. Massage is good for toning the muscles, which most male children need. By the age of six children must start school under the supervision of a competent teacher, and when they reach the age of puberty they should have good command of language and grammar, have learned the Koran by heart, and mastered arithmetic. If they show no interest in these subjects then they should learn a trade, such as building, or carpentry or other type of work. There is also a chapter on the signs of puberty in both males and females. The last three chapters of this treatise are concerned with philosophy, the soul and metempsychosis.

AHMAD IBN MUHAMMAD AL-BALADI

There is another, rather long treatise on obstetrics and paediatrics which has survived under the title On the Management of Pregnant Women and Children.²² It contains 276 folios. It was written by an Egyptian physician Ahmad Ibn Muhammad al-Baladi²³ who dedicated it to a Jewish physician Yakub Ibn Killis.²⁴ The latter was at the same time wezir to the Caliph al-Aziz Billah. There are four copies extant; two in India, one in Cairo, one at the library of the Royal College of Physicians, London.

Other sources from which we gather our knowledge regarding paediatrics are the cyclopaedic works of Rhazes, Avicenna and other physicians who lived during the golden era of Islam [9th-12th centuries]. In his famous work al-Qānūn, known to the Europeans as the 'Canon', Avicenna [A.D. 980-1037] allows special chapters on children's diseases and their treatment.²⁵ This man's reputation in the field of systematization is by far the greatest among the Arab physicians of the Middle Ages. He was a keen and perceptive diagnostician, though how much of his knowledge in this field he owed to the observations of Rhazes, born 115 years earlier is still not entirely clear. However, he was the first to write a careful description of what he calls SARSAM,²⁶ [loosely translated as inflammation in the head]: 'Most of these patients die from asphyxia. I say this is probably due to the involvement of some important organ, other than the brain, such as respiratory muscles.'²⁶ He also speaks of fever and convulsions in children during dentition.

Avicenna's observations on stones in the kidneys and bladder are also worth quoting:

'Pain in vesical calculi is not as marked as in renal . . . Stones in the bladder are rougher; for being in a big space there is much more chance for the deposition of roughening materials, and on that account they also become larger. Two or more stones may occur at the same time in the bladder, and by rubbing against each other they may produce a good deal of sand in the urine. In vesical calculi there is pain and itching in the end of the penis and in the perineum, and the patient, who very often is a child, keeps playing with and scratching his penis. There may be prolapse of the rectum and suppression of urine or simple difficulty in urination. Although the stream is usually strong it may be followed by dripping. As soon as urination is over the patient feels the urge to urinate again. Often there is blood in the urine . . . Very frequently there is retention of urine. In this case lay the patient on his back, lift him by the buttocks

and then shake him. The stone will generally fall back from the neck of the bladder, and if pressure is applied to the perineum the urine may start to flow. If this method fails you can facilitate the flow of urine by inserting the finger in the rectum and try to push the stone away from the neck of the bladder . . . If this does not work, then use a catheter. A small stone is more apt to cause retention than a large one.' ²⁷

RHAZES [865-925]

We should not forget to mention Rhazes [865-925] who was the first to describe smallpox and differentiate it from measles and other exanthemata. One may read the differential diagnosis in Greenhill's translation: ' . . . That the inquietude, nausea and anxiety are more frequent in measles than smallpox; while on the other hand, the pain in the back is more peculiar to the smallpox than to the measles.'²⁸ Rhazes' little treatise on children is preserved in Latin translation.²⁹ The original Arabic text is presumably lost, and cannot be traced even in the exhaustive work of Paul Kraus.³⁰ Sir George Frederick Still, in his History of Paediatrics, lists 22 chapters in this work, all on different children complaints but no place is given to the care and nursing of infants; Rhazes deals only with diseases of children. Sir George Still gives Rhazes' own account of what was known then as Mater puerorum, a term introduced by the Arab physicians which, perhaps, signifies convulsion as opposed to epilepsy. ³¹

In Muslim Spain there were other famous physicians who wrote on paediatrics and obstetrics. Among them is Arīb Ibn Sa'īd from Cordova,³² in whose work on obstetrics we find the following: 'If a woman suffers from pain in her hips or other parts of her body and then becomes pregnant, these pains will disappear'. We also find the following clinical observations: 'If the breasts of a pregnant woman suddenly get smaller she is certain to miscarry'. The author also notes the ominous signs of pregnancy:

'If a woman becomes pregnant and her eyes are sunk, her face and feet swollen, her ears pale and her lips greenish then she will either go into labour which ends in still

birth or she might give birth to a sick baby that dies soon after parturition or to a live infant that does not last long'. ³³

AVERROES [1126-1198]

In his Kitāb al-Kulliyāt, which is a résumé of medical science, Ibn Rushd, known to the West as Averroes, [A.D. 1126-1198] writes a section on the care of the newborn infant; he quotes Galen's advice as to the salting of the skin of the newborn, but he has sufficient originality to disagree with him: 'But in my opinion it is more useful to rub them with oil prepared from nuts, it produces more effectively the result we look for from the salt and has not the mordant effect of the salt'. ³⁴

My allotted time of half an hour runs out and I must conclude this very short paper which is it has been my privilege indeed and my pleasure to present to you. I hope it has stimulated your interest in Arabian medicine - a system of medicine, borrowed mainly from the Greeks and to which Arab genius infused new life. In the sub-continent of India it is still practised by local doctors known as Hakim.

I may add that it should be clear that when I speak of Arabian medicine I am not thinking in racial terms, but in cultural terms. The rich civilization of the high Abbasid period in the east and that of glorious Muslim Spain in the west was Arabic in language and very largely in tone. Yet among the contributors to such culture were Christians, Jews, Zoroastrians, Sabians, Persians and Turks - all under the umbrella of Islam.

REFERENCES and NOTES

1. Al-Bustāni, B. Muhīt Al-Muhīt [Arabic Lexicon], Beirut: 1867, I, 48.
cf. Levy, R. Sociology in Islam, Cambridge: Cambridge University Press, 1931.
2. Al-Zubaidī, M. Taj Al-Arūs, Bulaq: AH 1278, V, 461; Smith, R. Kingship and Marriage in Early Arabia, Cambridge: 1885, ch. ii and iv.
3. Al-Shaibāni, M.H. Jāmi Al-Saghīr [on the margin of Kitāb Al-Kharāj of Abu-Yūsuf], Bulaq: AH 1302, 51.
4. Al-Bukhārī, M. Sahīh, Ed. Krehl, Leiden: 1864, II, 34.
5. cf. Koran, XXVIII, 44 'Wealth and sons are the adornment of life'.
cf. ibid., VIII, 28 & LX, 9.
cf. von Kremer, A. Culturgeschichte des Orients, Wien: 1875, II, 120.
6. Sachau, E. Muhammedanisches Recht, Berlin: 1897.
This special oath of accusation here in question is known as Li'ān lit. 'The calling down of a curse upon someone.' The Muslim law-books specify certain holy places in which these oaths are sworn. The children of a woman divorced by Li'ān are illegitimate.
cf. Hughes, Dictionary of Islam, London: 1885, 293.
7. The story of Zeenab, the Kurdish slave-girl in Morier's Hajji Baba of Isphahan, is almost certainly drawn from life, and may be taken as an illustration.
8. cf. Koran, XXXI, 13.
9. ibid., II, 233; LXV, 6.
10. cf. ibid., XXIV, 56.
11. Lyons, M.C. and Mattock, J.N. Hippocrates on Embryos, Cambridge: 1978.

12. Steinschneider, M. 'Die Griechischen Aerzte in Arabischen Übersetzungen' Arch. Path. Anat. Physiol. Clin. Med. 1891, 124, folge XII, Bd IV, 130.
13. Kitāb Al-Fihrist, Ed. Flugel, Leipzig: 1891, 244.
14. Ibn Abi Usaibiah Tabaqāt al-Atibbā, Beyrouth: 1965, 481.
15. Isaacs, H.D. '"Isaac Israeli" le médecin' Rev. Hist. Med. Heb. 1973, [105], 139-45.
16. According to Dr Al-Hailah salting of the skin of the newborn is still practised by some Tunisians today. cf. AlHailah, M. Siyāsat Al-Sibyān, Tunis: Manar Press, 1968, 60, n2.
17. Isaacs, H.D. On Isaac Israeli's Work "De Febris", Ph.D. thesis, University of Manchester, 1969. cf. Latham, J.D. and Isaacs, H.D. The Third Discourse on Phthisis, Cambridge: 1981.
18. Ibn Abi Usaibiah Tabaqat Al-Atibbā, Beyrouth: 1965, 342.
19. Browne, E.G. Or. MS P.4,8 University Library, Cambridge.
20. Al-Majūsī, Ali Ibn Al-Abbas Kitāb Kāmil Al-Sinā'ah, Bulaq: AH 1294, II, 349.
21. ibid., II, 53.
22. Tritton, A.S. J. R. Asiatic Soc. 1951, 183.
23. Ibn Abi Usaibiah Tabaqāt Al-Atibbā, Beyrouth: 1965, 333.
24. Mann, J. The Jews in Egypt and Palestine under the Fatimids, London: Oxford University Press, 1922, I, 18-9.
25. Ibn Sīnā Al-Qānūn fi'il Tibb, Bulaq: AH 1294, I, 150-8.

26. ibid., II, 45.
cf. De Koning, P. Trois Traités d'Anatomie Arabes,
Leiden: 1903, 819.
27. Ibn Sīnā Al-Qānūn fi'l Tibb, Bulaq: 1294, II, 509-10.
28. Major, R. Classic Descriptions of Disease,
Springfield: 1965, 197.
29. de Solo Geraldus. Practica Super nono al-Mansoris,
Lugduni: 1504.
30. Kraus, P. Epître de Beruni, Contenant le Repertoire des Ouvrages de ar-Razi, Paris: 1936.
31. Still, G.F. The History of Paediatrics, London: Oxford University Press, 1931, 44.
32. Kitāb Khalq Al-Janīn, Algiers: Librairie Ferraris, 1956.
33. Isaacs, H.D. 'Some clinical methods used by the Arabs in the Middle Ages' Proc. XXIII Int. Congr. of the History of Medicine, London: 1974, 85.
34. Still, G.F. op. cit., 53.
cf. Ezekiel XVI, 4.



